GASBOY

Atlas™ Fuel Systems

Owner's Manual

MDE-4363F

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This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

Approvals

Gasboy, Greensboro, is an ISO 9001:2000 registered facility.

Underwriters Laboratories (UL):

UL File#	Products listed with UL
MH4314	All dispensers and self-contained pumping units
MH10581	Key control unit, Model GKE-B Series
	Card reader terminals, Models 1000, 1000P
	Site Controller, Model 2000S CFN Series
	Data entry terminals, Model TPK-900 Series
	Fuel Point Reader System

California Air Resources Board (CARB):

Executive Order #	Product
G-70-52-AM	Balance Vapor Recovery
G-70-150-AE	VaporVac

National Conference of Weights and Measures (NCWM) - Certificate of Compliance (CoC):

Gasboy pumps and dispensers are evaluated by NCWM under the National Type Evaluation Program (NTEP). NCWM has issued the following CoC:

CoC#	Product	Model #	CoC#	Product	Model #	CoC#	Product	Model #
95-179	Dispenser	9100 Retail Series, 8700 Series, 9700 Series	91-019	Dispenser	9100 Commercial Series	05-002	Atlas	8700K, 8800K, 9100K, 9200K, 9800K
95-136	Dispenser	9800 Series	91-057	Controller	1000 Series FMS, 2000S-CFN Series			

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1 – Introduction

Purpose

This manual provides instructions for safely operating, programming, and maintaining the Atlas™ Fuel Systems pumps/dispensers.

CAUTION

Certain special alternative fuels such as E85 and additives can degrade pump/dispenser performance or integrity if the dispensers are not designed for use with such fuels. Additionally, converting to certain standard fuels (gasoline, diesel, kerosene, and so on) from alternative fuels such as those with ethanol (E85), methanol, or Biodiesel or from alternative fuels to standard fuels can degrade dispenser performance or integrity. Similar effects can also occur when converting units to different standard fuel types. **As per UL® 87A requirements, nozzles dispensing E85 fuel and DEF must not be used to dispense any other type of fuel such as Gasoline.**

Leaks and potential environmental hazards can result or components may fail prematurely.

To avoid these issues, follow the guidelines provided for dispensing E85 fuel and DEF in this manual and MDE-4331K Atlas Fuel Systems Installation Manual.

Intended Users

This manual is written for the owners and the operators of the Atlas Fuel Systems pumps and dispensers.

Scope

This manual provides the following information about the Atlas Fuel Systems pumps and dispensers:

- Operating the pumps/dispensers
- Preparing the pumps/dispensers for service
- Maintaining the pumps/dispensers

Abbreviations and Acronyms

The following table contains a list of abbreviations and acronyms used in this manual.

Note: For more detailed definitions, refer to "Glossary" on page G-1.

Term	Description
AC or ac	Alternating Current
ASC	Authorized Service Contractor
ATC	Automatic Temperature Compensation
CFR	Code of Federal Regulations
CPR	Cardiopulmonary Resuscitation
CPU	Central Processing Unit
DC (or dc)	Direct Current
DEF	Diesel Exhaust Fluid
DIP	Dual In-line Package
GPM (or gpm)	Gallons Per Minute
HF	High Flow
LPM	Liters Per Minute
NEC	National Electrical Code
NFPA	National Fire Protection Association
OSHA	Occupational Safety and Health Association
PCB	Printed Circuit Boards (preferred term: board)
POS	Point Of Sale
PPG	Pulses Per Gallon
PPL	Pulses Per Liter
PPP	Programmable Pump Preset
PPU	Price Per Unit (that is, price per gallon or liter)
RAM	Random Access Memory
ROM	Read-Only Memory
RS	Request-to-Send (modem application)
SF	Standard Flow
SHF	Super High Flow
STP	Submerged Turbine Pump
UHF	Ultra High Flow
UL	Underwriters Laboratory
VAC (or vac)	Volts Alternating Current

2 – Important Safety Information

Note: Although DEF is non-flammable, Diesel is flammable. Therefore, for DEF cabinets that are attached to Diesel dispensers, follow all the notes in this section that pertain to flammable fuels.

This section introduces the hazards and safety precautions associated with installing, inspecting, maintaining or servicing this product. Before performing any task on this product, read this safety information and the applicable sections in this manual, where additional hazards and safety precautions for your task will be found. Fire, explosion, electrical shock or pressure release could occur and cause death or serious injury, if these safe service procedures are not followed.

Preliminary Precautions
You are working in a potentially dangerous environment of flammable fuels, vapors, and high voltage or pressures. Only trained or authorized individuals knowledgeable in the related procedures should install, inspect, maintain or service this equipment.

Emergency Total Electrical Shut-Off
The first and most important information you must know is how to stop all fuel flow to the pump/dispenser and island. Locate the switch or circuit breakers that shut off all power to all fueling equipment, dispensing devices, and Submerged Turbine Pumps (STPs).

⚠ WARNING

The EMERGENCY STOP, ALL STOP, and PUMP STOP buttons at the cashier's station WILL NOT shut off electrical power to the pump/dispenser. This means that even if you activate these stops, fuel may continue to flow uncontrolled.

You must use the TOTAL ELECTRICAL SHUT-OFF in the case of an emergency and not the console's ALL STOP and PUMP STOP or similar keys.

Total Electrical Shut-Off Before Access
Any procedure that requires access to electrical components or the electronics of the dispenser requires total electrical shut off of that unit. Understand the function and location of this switch or circuit breaker before inspecting, installing, maintaining, or servicing Gilbarco equipment.

Evacuating, Barricading and Shutting Off
Any procedure that requires access to the pump/dispenser or STPs requires the following actions:

- An evacuation of all unauthorized persons and vehicles from the work area
- Use of safety tape, cones or barricades at the affected unit(s)
- A total electrical shut-off of the affected unit(s)

Read the Manual
Read, understand and follow this manual and any other labels or related materials supplied with this equipment. If you do not understand a procedure, call a Gilbarco Authorized Service Contractor or call the Gilbarco Support Center at 1-800-800-7498. It is imperative to your safety and the safety of others to understand the procedures before beginning work.

Follow the Regulations
Applicable information is available in National Fire Protection Association (NFPA) 30A; *Code for Motor Fuel Dispensing Facilities and Repair Garages*, NFPA 70; *National Electrical Code (NEC)*, Occupational Safety and Hazard Association (OSHA) regulations and federal, state, and local codes. All these regulations must be followed. Failure to install, inspect, maintain or service this equipment in accordance with these codes, regulations and standards may lead to legal citations with penalties or affect the safe use and operation of the equipment.

Replacement Parts
Use only genuine Gilbarco replacement parts and retrofit kits on your pump/dispenser. Using parts other than genuine Gilbarco replacement parts could create a safety hazard and violate local regulations.

Safety Symbols and Warning Words

This section provides important information about warning symbols and boxes.

Alert Symbol

This safety alert symbol is used in this manual and on warning labels to alert you to a precaution which must be followed to prevent potential personal safety hazards. Obey safety directives that follow this symbol to avoid possible injury or death.

Signal Words
These signal words used in this manual and on warning labels tell you the seriousness of particular safety hazards. The precautions below must be followed to prevent death, injury or damage to the equipment:

DANGER: Alerts you to a hazard or unsafe practice which will result in death or serious injury.

WARNING: Alerts you to a hazard or unsafe practice that could result in death or serious injury.

CAUTION with Alert symbol: Designates a hazard or unsafe practice which may result in minor injury.

CAUTION without Alert symbol: Designates a hazard or unsafe practice which may result in property or equipment damage.

Working With Fuels and Electrical Energy

Prevent Explosions and Fires
Fuels and their vapors will explode or burn, if ignited. Spilled or leaking fuels cause vapors. Even filling customer tanks will cause potentially dangerous vapors in the vicinity of the dispenser or island.

DEF is non-flammable. Therefore, explosion and fire safety warnings do not apply to DEF fluid lines.

No Open Fire

Open flames from matches, lighters, welding torches or other sources can ignite fuels and their vapors.

No Sparks - No Smoking

Sparks from starting vehicles, starting or using power tools, burning cigarettes, cigars or pipes can also ignite fuels and their vapors. Static electricity, including an electrostatic charge on your body, can cause a spark sufficient to ignite fuel vapors. Every time you get out of a vehicle, touch the metal of your vehicle, to discharge any electrostatic charge before you approach the dispenser island.

Working Alone

It is highly recommended that someone who is capable of rendering first aid be present during servicing. Familiarize yourself with Cardiopulmonary Resuscitation (CPR) methods, if you work with or around high voltages. This information is available from the American Red Cross. Always advise the station personnel about where you will be working, and caution them not to activate power while you are working on the equipment. Use the OSHA Lockout/Tagout procedures. If you are not familiar with this requirement, refer to this information in the service manual and OSHA documentation.

Working With Electricity Safely

Ensure that you use safe and established practices in working with electrical devices. Poorly wired devices may cause a fire, explosion or electrical shock. Ensure that grounding connections are properly made. Take care that sealing devices and compounds are in place. Ensure that you do not pinch wires when replacing covers. Follow OSHA Lockout/Tagout requirements. Station employees and service contractors need to understand and comply with this program completely to ensure safety while the equipment is down.

Hazardous Materials

Some materials present inside electronic enclosures may present a health hazard if not handled correctly. Ensure that you clean hands after handling equipment. Do not place any equipment in the mouth.

⚠ WARNING

The pump/dispenser contains a chemical known to the State of California to cause cancer.

⚠ WARNING

The pump/dispenser contains a chemical known to the State of California to cause birth defects or other reproductive harm.

In an Emergency

Inform Emergency Personnel

Compile the following information and inform emergency personnel:

- Location of accident (for example, address, front/back of building, and so on)
- Nature of accident (for example, possible heart attack, run over by car, burns, and so on)
- Age of victim (for example, baby, teenager, middle-age, elderly)
- Whether or not victim has received first aid (for example, stopped bleeding by pressure, and so on)
- Whether or not a victim has vomited (for example, if swallowed or inhaled something, and so on)

⚠ WARNING

Gasoline/DEF ingested may cause unconsciousness and burns to internal organs. Do not induce vomiting. Keep airway open. Oxygen may be needed at scene. Seek medical advice immediately.

⚠ WARNING

DEF generates ammonia gas at higher temperatures. When opening enclosed panels, allow the unit to air out to avoid breathing vapors.
If respiratory difficulties develop, move victim away from source of exposure and into fresh air. If symptoms persist, seek medical attention.

⚠ WARNING

Gasoline inhaled may cause unconsciousness and burns to lips, mouth and lungs.
Keep airway open.
Seek medical advice immediately.

⚠ WARNING

Gasoline/DEF spilled in eyes may cause burns to eye tissue.
Irrigate eyes with water for approximately 15 minutes.
Seek medical advice immediately.

⚠ WARNING

Gasoline/DEF spilled on skin may cause burns.
Wash area thoroughly with clear water.
Seek medical advice immediately.

⚠ WARNING

DEF is mildly corrosive. Avoid contact with eyes, skin, and clothing. Ensure that eyewash stations and safety showers are close to the work location. Seek medical advice/recommended treatment if DEF spills into eyes.

IMPORTANT: Oxygen may be needed at scene if gasoline has been ingested or inhaled. Seek medical advice immediately.

Lockout/Tagout

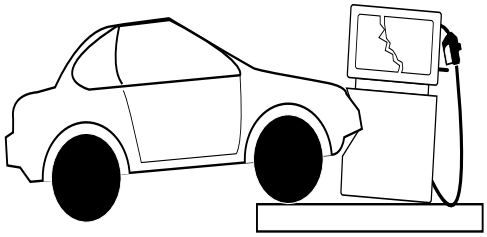
Lockout/Tagout covers servicing and maintenance of machines and equipment in which the unexpected energization or start-up of the machine(s) or equipment or release of stored energy could cause injury to employees or personnel. Lockout/Tagout applies to all mechanical, hydraulic, chemical, or other energy, but does not cover electrical hazards. Subpart S of 29 CFR Part 1910 - Electrical Hazards, 29 CFR Part 1910.333 contains specific Lockout/Tagout provision for electrical hazards.

Hazards and Actions

WARNING

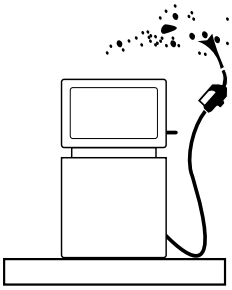
Spilled fuels, accidents involving pumps/dispensers, or uncontrolled fuel flow create a serious hazard.
Fire or explosion may result, causing serious injury or death.
Follow established emergency procedures.
DEF is non-flammable. However it can create a slip hazard. Clean up spills promptly.

The following actions are recommended regarding these hazards:



Collision of a Vehicle with Unit

Fire at Island



Fuel Spill

- Do not go near a fuel spill or allow anyone else in the area.
- Use station EMERGENCY CUTOFF immediately. Turn off all system circuit breakers to the island(s).
- Do not use console E-STOP, ALL STOP, and PUMP STOP to shut off power. These keys do not remove AC power and do not always stop product flow.
- Take precautions to avoid igniting fuel. Do not allow starting of vehicles in the area. Do not allow open flames, smoking or power tools in the area.
- Do not expose yourself to hazardous conditions such as fire, spilled fuel or exposed wiring.
- Call emergency numbers.

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3 – The Atlas Fuel System

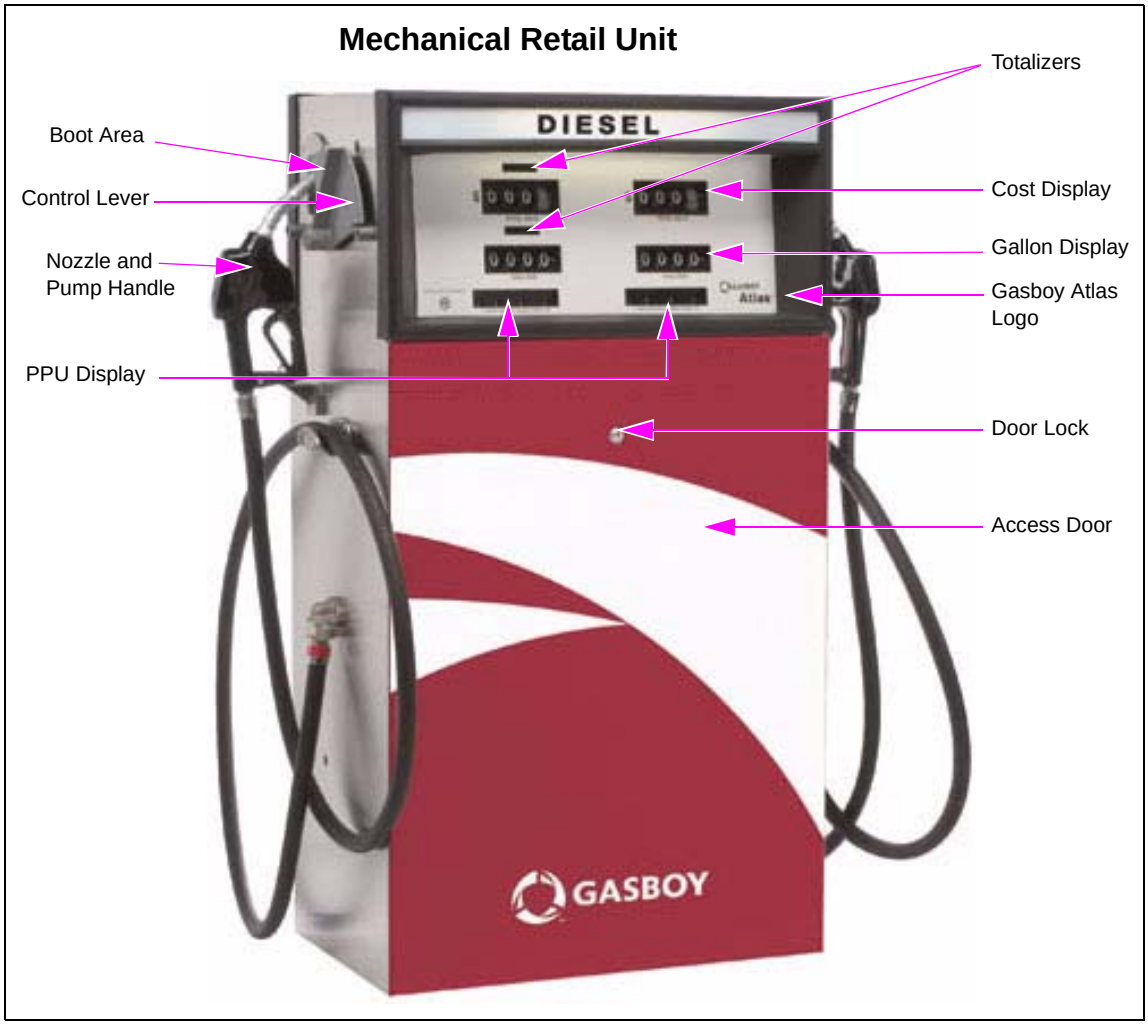
Pump/Dispenser Components

This section provides figures that show the internal and external components of pumps and provides information about these components. Refer this section as you perform the procedures in this manual.

Atlas Pump/Dispenser

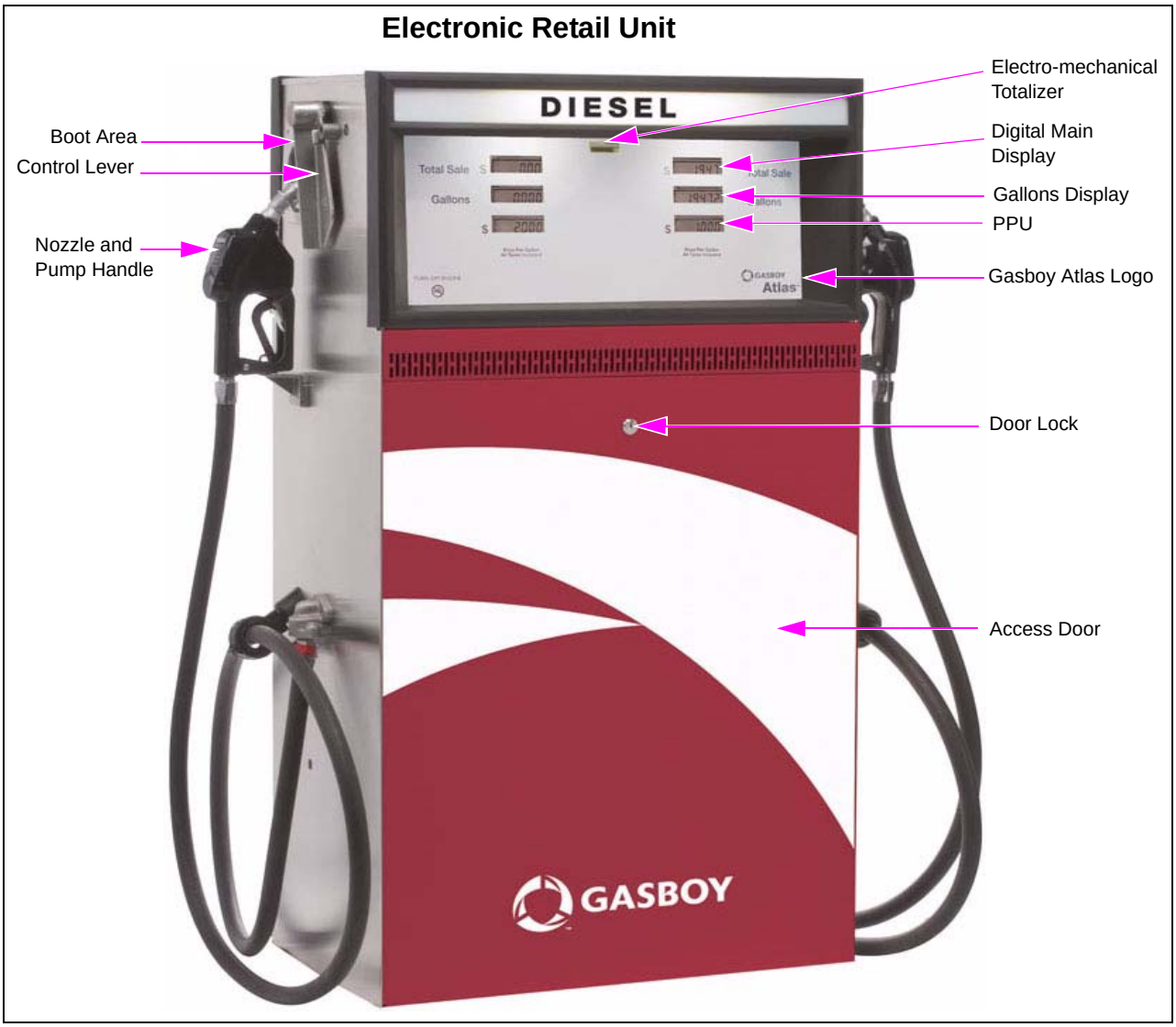
The external components of a Gasboy® Atlas pump/dispenser (**Mechanical Retail Unit**) are shown in Figure 3-1. Mechanical units have mechanical digital type displays as opposed to electronic digital type displays. In units that are Commercial instead of Retail, the external components are almost the same with the exception that there are no cost displays, Price per Unit (PPU) and the main display showing only the total fuel pumped.

Figure 3-1: Atlas Mechanical Retail Unit



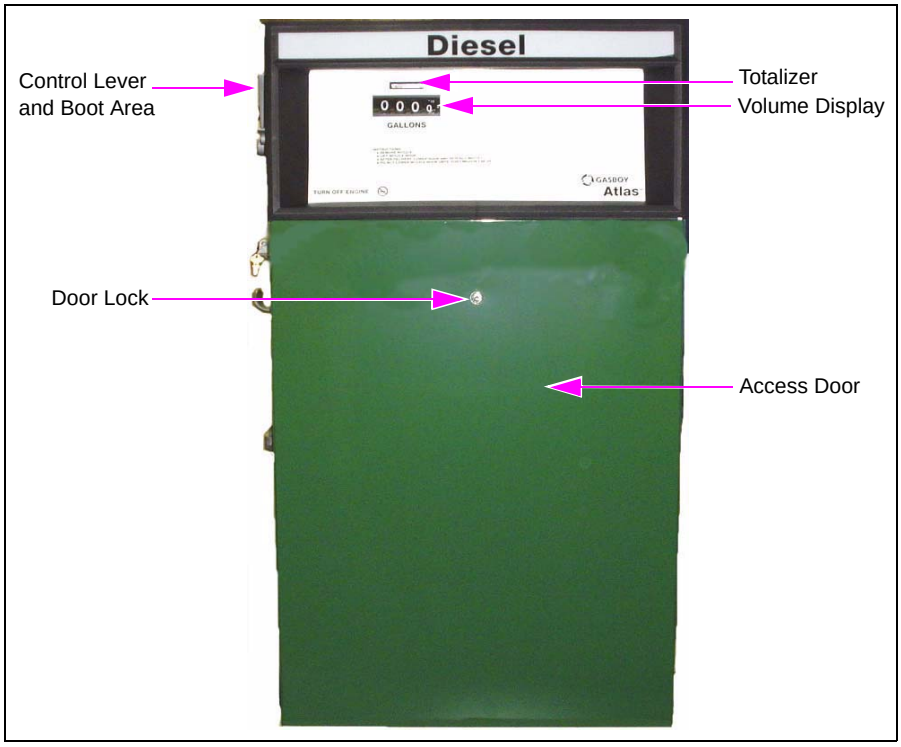
The external components of a Gasboy Atlas pump/dispenser (**Electronic Retail Unit**) are shown in Figure 3-2. Electronic units have digital displays as opposed to mechanical displays. In units that are Electronic Commercial instead of Retail, the external components are almost the same with the exception that there are only totalizers, PPU, and the main display showing the gallons pumped.

Figure 3-2: Atlas Electronic Retail Unit



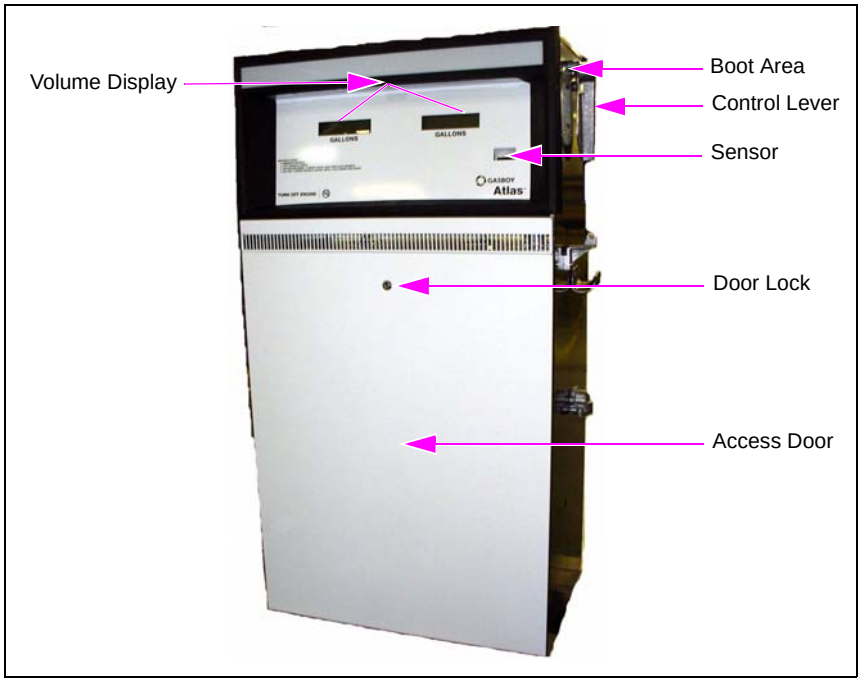
Commercial Mechanical - 9100

Figure 3-3: Commercial Mechanical - 9100



Commercial Electronic - 9800

Figure 3-4: Commercial Electronic - 9800



General Description - 9800 (Except 9820)

The Gasboy Atlas dispensing units are UL-listed and are available in a self-contained (suction pump) package or in a remote-controlled (dispenser) package. Both packages offer varieties of models which are available as single hose outlets or dual hose outlets (with single or dual product capability). The self-contained models are available in standard flow (SF) models up to 15 GPM (56 LPM/12 IGPM); high flow (HF) models up to 22 GPM (83 LPM/18 IGPM); single-hose super high flow (SHF) models up to 40 GPM (151 LPM/33 IGPM); single-hose ultra high flow (UHF) models up to 50 GPM (189 LPM/42 IGPM). The rate of delivery for the remote-controlled packages will vary according to the size of the submersible pump. The delivery rate of both packages will also vary depending on the installation conditions and added accessories.

Visual identification can be quickly made between Commercial and Retail pumps/dispensers. Commercial pumps/dispensers have displays only for gallons/liters on a side(s), when Retail has displays for both gallons/liters and cost per gallon/liter.

The Atlas units can either have Side Load or Front Load nozzle configuration. The Atlas pump/dispenser offers the following features.

Models	Suction Pumps	Remote Dispensers	Features
SF Mechanical Commercial	9152K, 9152KTW1, 9152KTW2	9152KX, 9152KXTW1, 9152KXTW2	• Inlet: 1-1/2” NPT female threads • Discharge: 1” NPT female threads (can be reduced to 3/4” with bushing) • Motor: (self-contained) 1 HP continuous duty
SF Electronic Commercial	9852K, 9852KTW1, 9852KTW2	9852KX, 9852KXTW1, 9852KXTW2	
SF Mechanical Retail	8752K, 8752KTW1, 8752KTW2	8752KX, 8752KXTW1, 8752KXTW2	
SF Electronic Retail	8852K, 8852KTW1, 8852KTW2	8852KX, 8852KXTW1, 8852KXTW2	
HF Mechanical Commercial	9153K, 9153KTW2	9153KX, 9153KXTW2	• Inlet: 1-1/2” NPT female threads • Discharge: 1” NPT female threads • Motor: (self-contained) 1 HP continuous duty
HF Electronic Commercial	9853K, 9853KTW2	9853KX, 9853KXTW2	
HF Mechanical Retail	8753K, 8753KTW2	8753KX, 8753KXTW2	
HF Electronic Retail	8853K, 8853KTW2	8853KX, 8853KXTW2	
SHF Mechanical Commercial	9140K	9140KX	• Inlet: 2” NPT female threads • Discharge: 1” NPT female threads • Motor: (self-contained) (2) 1 HP continuous duty
SHF Electronic Commercial	9840K	9840KX	
UHF Electronic Commercial	9850K	9850KX, 9850KXTW2	• Inlet: 2” NPT female threads • Discharge: 1” NPT female threads • Motor: (self-contained) 1-1/2 HP continuous duty
SF Electronic Commercial E85 Unit		9872KX, 9872KXTW1	• Inlet: 1-1/2” NPT female threads • Discharge: 3/4” NPT female threads
DEF Dispenser		9862KX	• Bottom Inlet: 1” BSPP female threads • Side Inlet: 1” BSPP male threads • Discharge: 1” BSPP male threads

General Description of 9100K

The Gasboy Series 9100K dispensing units are UL-listed and are available in a self-contained (suction pump) package or in a remote-controlled (dispenser) package. Both packages offer varieties of models which are available as single hose outlets or dual hose outlets (with single or dual product capability). The self-contained models are available in standard speed, up to 56 LPM/15 GPM; in high speed, up to 83 LPM/22 GPM; or in a single hose model with high capacity speed, up to 99 LPM/26 GPM. The rate of delivery for the remote-controlled packages will vary according to the size of the submersible pump. The delivery rate of both packages will also vary depending on the installation conditions and added accessories.

All models of the Series 9100K offer mechanical non-computers complete with electric resets.

Mechanical pump registers show the total volume for a delivery. All non-computers will read up to 999.9 gallons or liters.

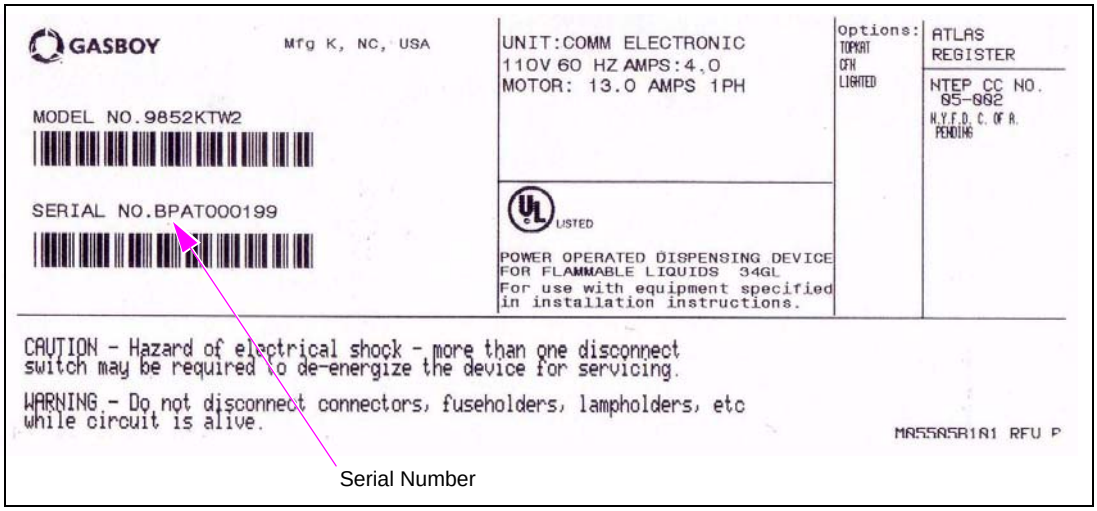
Common Functions

This subsection provides instructions for common functions on the Gasboy Atlas pumps/dispensers.

Understanding Date Codes

A two letter date code is stamped on the serial number plate before the serial number. This code shows the month and year of manufacture. To determine the age of the equipment for warranty purposes, refer to the date code.

Figure 3-5: Serial Number Plate



For example, a serial number plate stamped "BP AT000199" contains the following information:

- Date code [BP]—This unit was manufactured in B=February P=2005.
- Serial Number [AT000199]

To determine the date code on a Gasboy pump or dispenser, refer to the following tables.

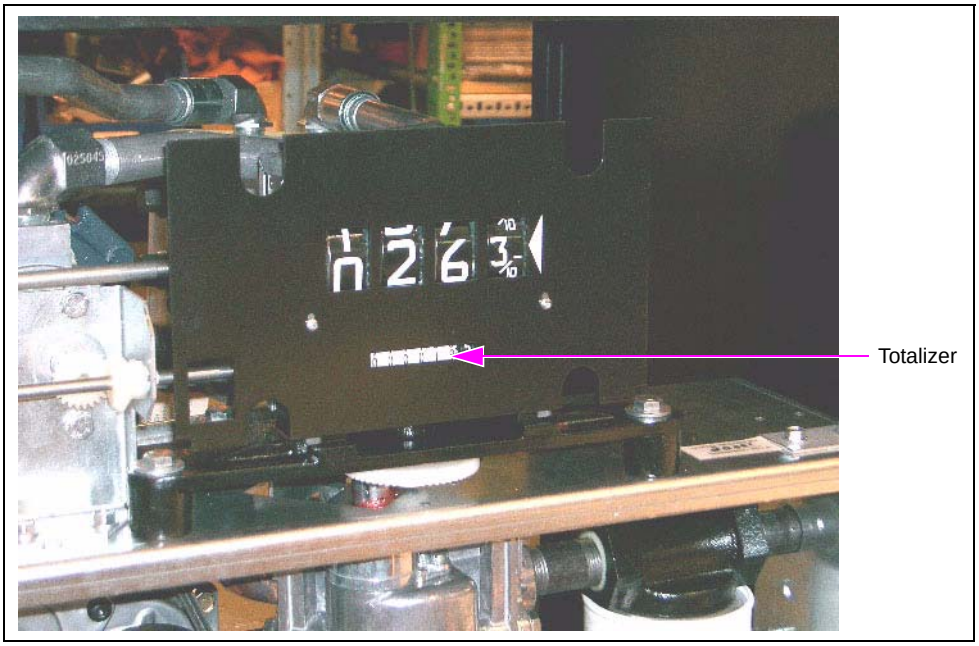
Month Codes		
A = January	E = May	J = September
B = February	F = June	K = October
C = March	G = July	L = November
D = April	H = August	M = December

Year Codes	
P = 2005	U = 2009
R = 2006	W = 2010
S = 2007	X = 2011
T = 2008	Y = 2012

Pump Totals (9100 Series)

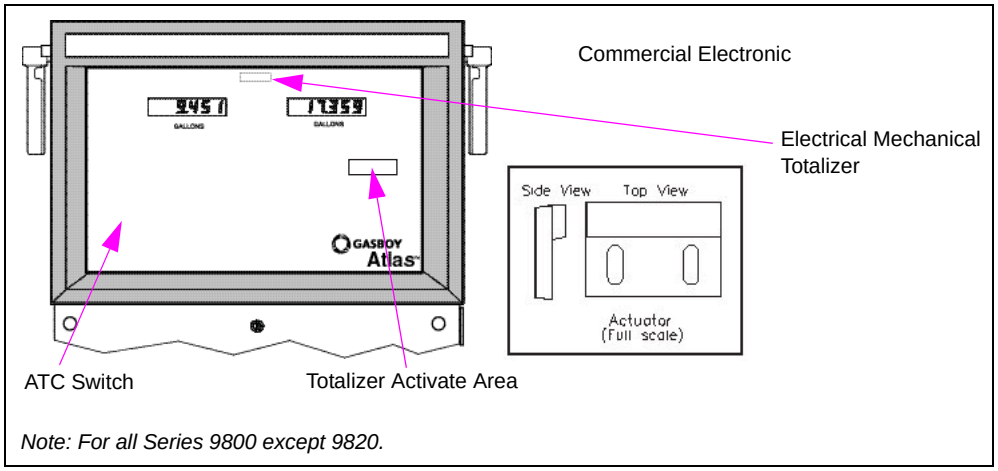
Pump totals can be read from the totalizers. At the close of each day's business, the total can be read from the unit and subtracted from the day before to obtain the total for that day. If the unit is in use 24 hours a day, it is advisable to take the readings in the morning also, so as to monitor the night usage.

Figure 3-6: Pump Totals - 9120



Commercial Electronic (Series 9800 Only)

Figure 3-7: Commercial Electronic Totals - 9800



Note: For all Series 9800 except 9820.

The Atlas stores a running quantity total for each pump side. These electronic totalizers work independent of the optional electrical mechanical totalizers that may be installed and are shown as whole gallons (liters) on the displays (decimal point is shown, although it is disregarded). The totalizer data is stored in battery-backed memory. The Atlas is supplied with an actuator (shown in the above illustration) which allows you to view and reset electronic totalizers.

To view pump totalizers, ensure that the pump handles are off; and no transaction is in progress. Locate the actuator area (where the Gasboy dial face logo is located) that is on the same pump side as the serial number tag. Touch the actuator area with the actuator as shown. The totalizer data for each pump side will be displayed for 10 seconds. If more time is required, touch the actuator to the actuator area for an additional 10 second period. To reset the electronic totalizers, refer to "Electronic Component Access (Series 9800 Only, Except 9820 Series)" on page 19.

- Turn off the 9800K power switch.
- Close JP7 (or SW1-7 for older CPU boards) on the CPU PCB. Hold the actuator against the totalizer bracket and turn the power switch ON. The displays must change to all zeroes.
- Remove the actuator and open the switch JP7 (or SW1-7).

Note: Returning switch 1-7 to the open position prevents the totalizers from being reset the next time the actuator is used to read them.

Mechanical Totalizers for 9850 Only

An optional mechanical totalizer for each side is available for 9850 models only. Each totalizer has:

- Eight digits
- Seven whole gallons
- One tenth-gallon column
- Eight whole digits for liters

The mechanical totalizers are located below each nozzle hook (see Figure 3-8).

Figure 3-8: Mechanical Totals for 9850 Series - 1

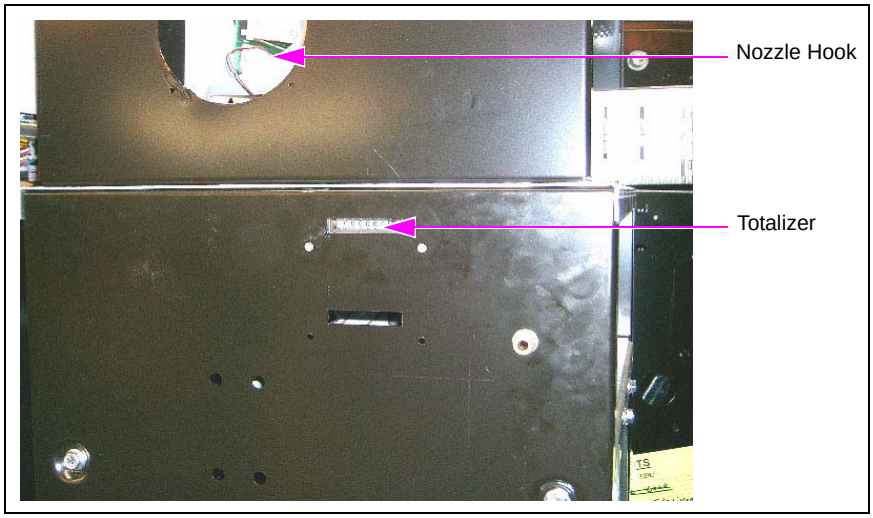
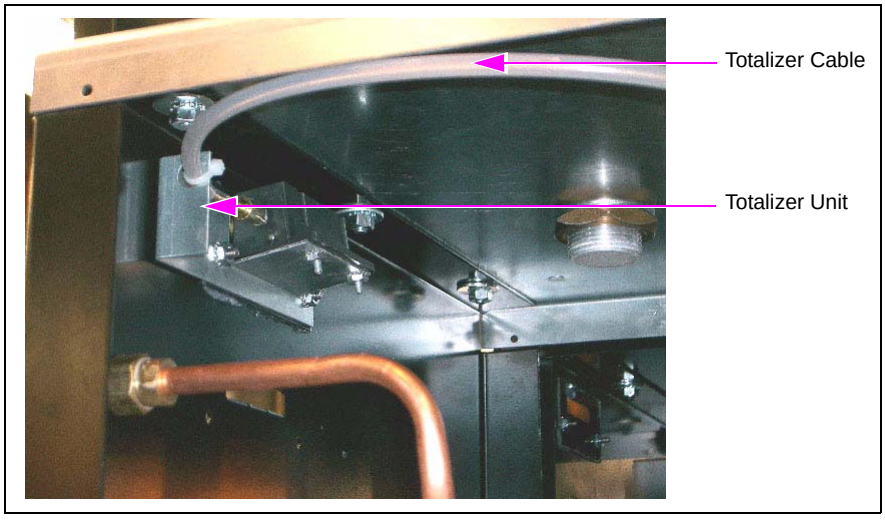


Figure 3-9: Mechanical Totals for 9850 Series - 2



Site Preparation

To ensure safety and long-term reliability of your equipment, ensure that your units are installed by a knowledgeable ASC. When your units are installed, ensure that the installer considers the guidelines in the following section.

Important Requirements for E85 Units

The following equipment and materials are required to properly install E85 units:

UL-listed E85 Hose (Q13486)
- Veyance℠ Flexsteel® Futura™ Ethan-All for E85
- Veyance Flexsteel Futura for E25

Note: Extended Reach hoses are not available for the E85 applications.

UL-listed E85 Nozzle (M11298)
OPW 21GE
Note: Approved for use with the E85 dispensers, as required under UL 87A.

UL-listed E85 Swivel (N23748-04)
OPW 241 TPS-0492
Note: Approved for use with E85 dispensers, as required under UL 87A.

UL-listed E85 Shear Valve (T19695-23)
OPW 10P-0152E85
Note: Approved for use with E85 dispensers, as required under UL 87A.

UL-listed E85 Breakaway (N23010-10)
OPW 66V-0492
Note: Approved for use with E85 dispensers, as required under UL 87A.

Filter
Use only filters specifically marked for use with E85.

UL-listed Pipe Sealant
Use only UL-listed TPS PTFE Pipe Sealant manufactured by SAF-T-LOC International Corp.

UL-listed Teflon® Tape
Use only UL-listed Taega Technologies Inc. Teflon tape.
Note: Teflon tape must be used only at the inlet pipe connection.

IMPORTANT INFORMATION

For E85 Front Load units, side B is the side with the Junction Box. For nozzle boot positioning for the different models, refer to Atlas Foundation Diagrams section in MDE-4331 Atlas Fuel Systems Installation Manual.

Important Considerations for DEF Dispensers

CAUTION

Applicable during Installation and Operation of the Dispenser: DEF freezes at approximately 11 °F (-11.5 °C). Power to the dispenser and heater must always remain ON in cold weather. If power is lost and the temperature drops below this point within the DEF cabinet, the system must be inspected for freeze damage before restart. For sites that experience occasional power losses or for sites that are located in very cold climates, it is recommended that a backup power generator be used to maintain constant power to the dispenser. Do not use any additives to lower the freezing point of DEF. Additives of any type must not be used in DEF. Freezing can result in damage or inoperative hose breakaways, fluid lines or components, valves, nozzles and meters.

Prolonged storage at temperatures above 77 °F (25 °C) can impair the quality of DEF and reduce its shelf life.

CAUTION

DEF is mildly corrosive. It can corrode components that are made from incompatible material(s) and reduce their integrity. The use of incompatible material(s) may lead to leaks and spills, and can contaminate and degrade the DEF. When dispensing DEF, verify with the manufacturer if the material of all plumbing components are compatible with the DEF being dispensed.

CAUTION

Do not use Prover Cans meant for engine fuel with DEF or vice versa. Use stainless steel Prover Cans for DEF. DEF and engine fuel must not be mixed with each other or be contaminated by each other. Else, damage to a vehicle's engine or pollution control devices could occur. DEF crystallizes as its water base evaporates. Pouring out liquid will not guarantee that no corrosive DEF remains in the Prover Can. DEF must not be contaminated with Diesel fuel, contaminants, or other fluids or materials. Such contamination can cause serious damage to vehicle catalytic converters.

- Conventional fluid handling precautions are also applicable to DEF.
- Avoid contact with eyes, skin, and clothing. Ensure that eyewash stations and safety showers are close to the work location.
- DEF is mildly corrosive and non-flammable.
- Clean the DEF spill with water and dry the area with clean rags, especially areas that contain metallic parts. Spilt DEF can be slippery and will corrode certain types of metallic parts. Wear eye protection and rubber gloves during any cleanup activity.
- DEF is heavier than gasoline. Be aware that prover cans, containers filled with DEF, and so on will be considerably heavier than gasoline.

Guidelines in Atlas Fuel Systems Documentation and Other Codes

The following manuals provide guidelines for installing Atlas Fuel Systems pumps/dispensers:

- MDE-4331 Atlas Fuel Systems Installation Manual
- MDE-4333 Atlas Fuel Systems Site Prep Manual
- FE-356 Atlas Pump and Dispenser Field Wiring
- FE-357 Atlas Pump Retail/Commercial Field Wiring
- FE-361 Atlas Master & Satellite Field Wiring Diagram

Ensure that the installer follows the instructions in the above listed manuals and adheres to all applicable local, state, and national codes.

General Guidelines

Ensure that the installer, at a minimum, performs the following tasks:

- Attaches the hose breakaways.
- Follows all manufacturer installation instructions for devices attached to the dispenser, such as hoses, nozzles, and shear valves.
- Installs a line leak detection system for all dispensers (The system must comply with all local and state codes).
- Uses only UL-listed or approved attachments with the pump/dispenser.
- Installs shear valves for all dispensers and certain above ground tank pump applications properly.
- Follows all codes.
- Bolts units to the island properly.
- Tests hoses for conductivity before use as per the manufacturer's instructions.
- Uses appropriate safety signs as outlined in the manuals listed in "Guidelines in Atlas Fuel Systems Documentation and Other Codes".
- Uses isolation relays for dispensers (required by National Electrical Codes).
- Uses the recommended hose lengths for each unit unless you are using hose retrievers.

Note: This is not a complete list. For other requirements, refer to "Guidelines in Atlas Fuel Systems Documentation and Other Codes".

Hoses

Hoses must be UL approved and conductive from end-to-end. To determine the hose length, refer to "Determining Hose Length".

Note: When determining the hose length, the effect of adding breakaways adds significantly to the actual hose length.

⚠ WARNING

Hoses of excessive length may create a trip hazard.

Serious injury could occur as a result of tripping over an excessively long hose.

Do not use excessive length hoses. Also ensure that hose retrievers are installed and are in good operating condition.

Do not install soft-wall hoses, they commonly cause a small sale to indicate when the unit is activated and the nozzle is closed.

Determining Hose Length

To determine the correct hose length for various types of hoses, refer to the following table.

Type	Length
Standard hardwall 5/8 or 3/4 ID (without breakaway)	10 feet, 6 inches
Standard hardwall 5/8 or 3/4 ID (with breakaway)	9 feet, 6 inches
Standard breakaway whip hose	1 foot, 0 inches

Install Warning Labels and Signs for Customers

Install warning labels and signs to ensure that customers are warned of potential safety hazards. Ensure that the warning labels and the signs are readily visible. At a minimum, install the following signs:

- Turn off the vehicle before fueling.
- No smoking; do not use matches or lighters nearby.
- Use only non-breakable, approved containers for storing fuel; ensure that the container is metal and identified properly for fuel storage.
- Static electricity hazards during fueling.

Promptly replace any missing, incomplete, or illegible labels or operating instructions.

⚠ WARNING

Static electricity can cause an explosion.

Static electricity, including an electrostatic charge on your body, can cause a spark sufficient to ignite fuels and their vapors.

After getting out of a vehicle, touch the metal of your vehicle to discharge any electrostatic charge before you approach the dispenser island.

Operating Pumps/Dispensers

This section describes the operation of the pump/remote dispenser. It provides information on how to:

- Access the electronic components
- Set the standalone switch

If you are using a point of sale device, refer to the manufacturer instructions.

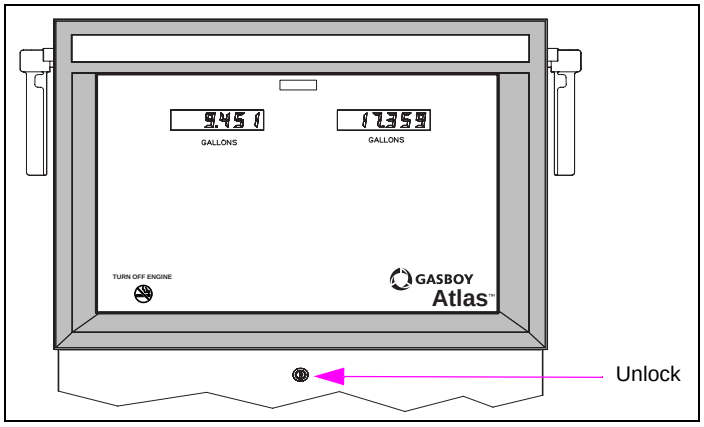
Electronic Component Access (Series 9800 Only, Except 9820 Series)

This section describes the operation of the pump/remote dispenser. It provides information on how to:

- Access the electronic components
- Set the internal switches
- Set the optional battery back-up power supply
- View and reset the electronic totalizers using the actuator
- Operate both pumps and remote dispensers

1 Unlock and remove the front panel (see Figure 3-10).

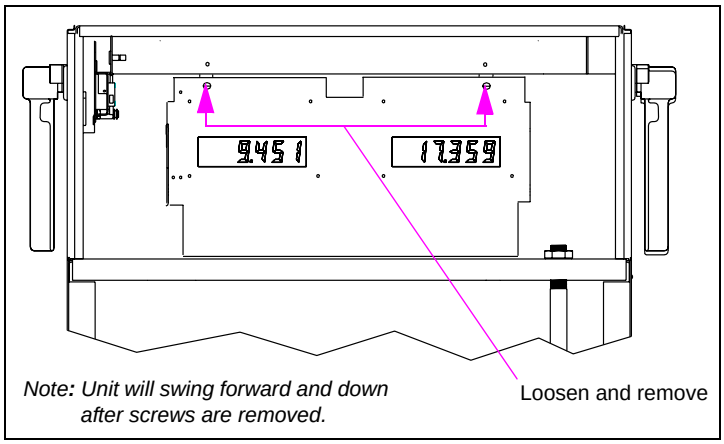
Figure 3-10: Front Panel of 9800 Series



2 Remove the two bolts securing the bezel assembly and remove bezel.

3 Remove the two bolts securing the display panel and pivot display panel down.

Figure 3-11: Display Panel



CPU Switch Settings (Series 9800 Only Including DEF 9862 Units)

The Series 9800 can be configured for various operating conditions using the switches located on the CPU PCB. Inspect these switches and change their settings, if required. Switch settings must be changed with the power switch OFF. CPU PCB reads the new settings when the power is turned ON again.

Note: Older Series 9800 CPU Diagram (board C06394, M05318, M05346).

Figure 3-12: Old CPU Board for 9800 Series

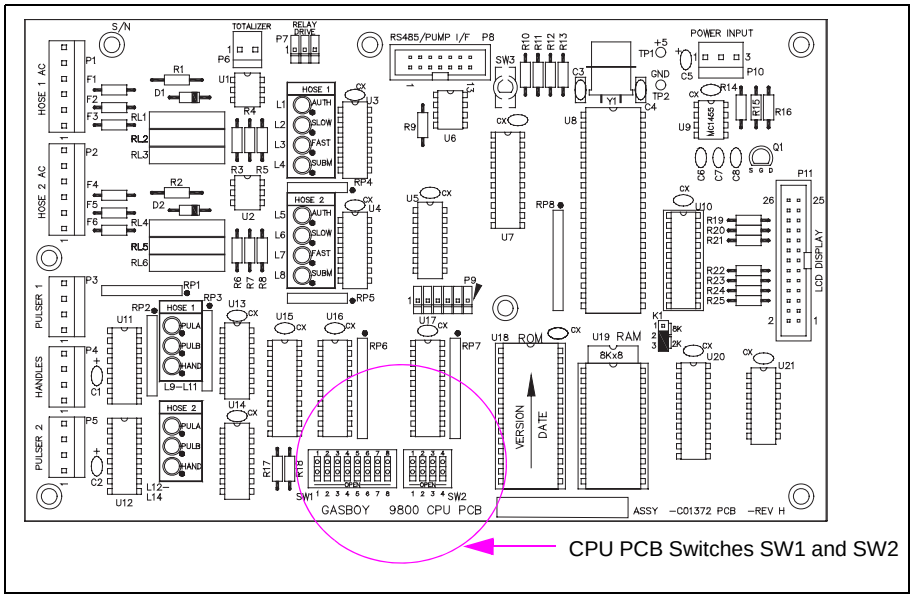
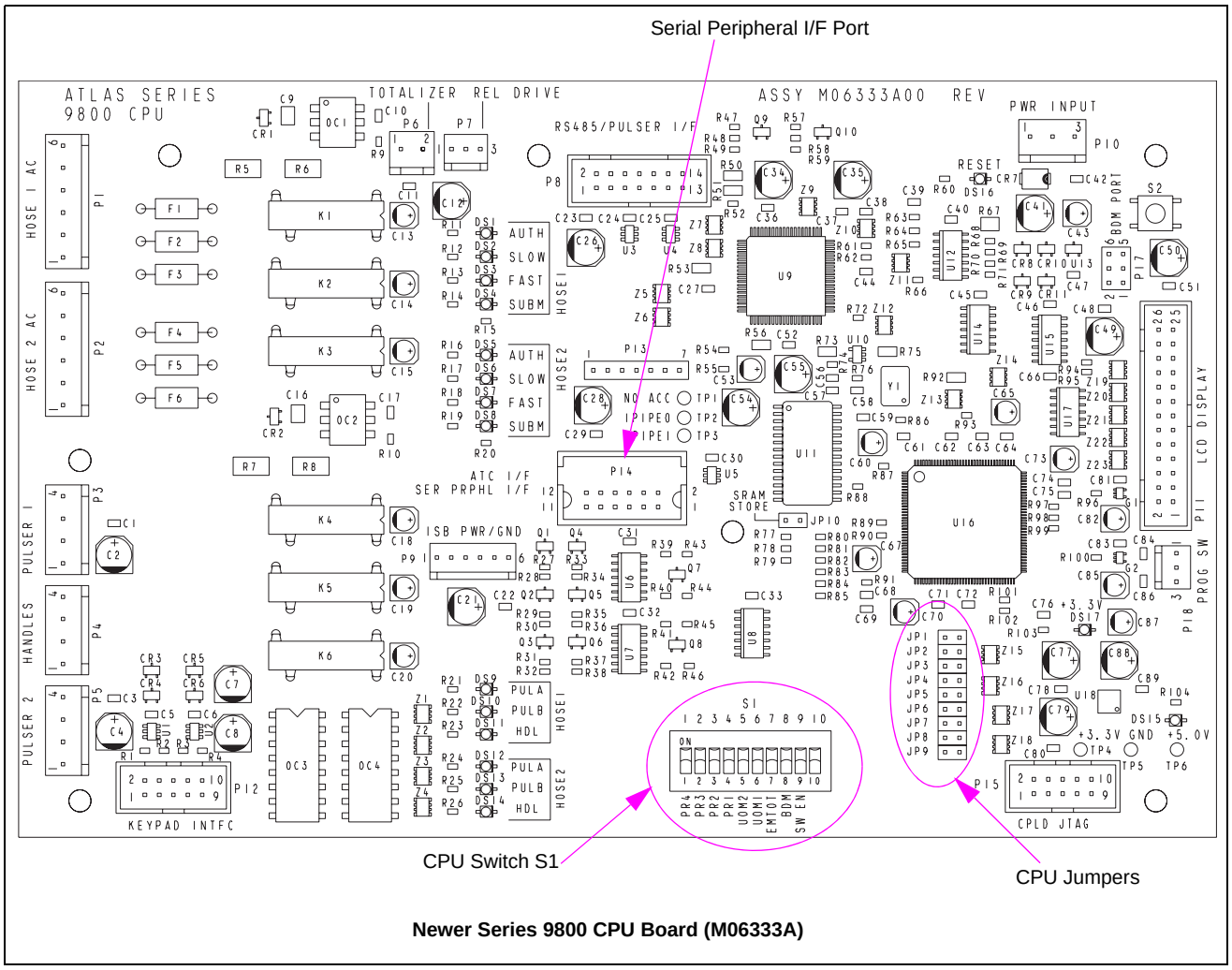


Figure 3-13: New CPU Board for 9800 Series



Newer Series 9800 CPU Board (M06333A)

Note: In the following tables, SW1 refers to switch banks in older series 9800 boards. Jumpers JP1-JP9 are used for new CPU boards (M06333A). Also, in new CPU boards, ***Closed*** *indicates that the CPU board is jumpered and* ***Open*** *indicates the absence of a jumper.*

CPU Jumpers (or SW1 for Older CPU Boards)

SW1-1 or JP1: Baud Rate

This switch is set to reflect the communications rate of the Gasboy RS-485 pump loop. It is:

- Open for 9600 baud
- Closed for 1200 baud

The Gasboy CFN system and TopKAT™ communicate at 9600 baud.

Baud Rate	SW1-1/JP1	Fuel System
9600	Open	CFN TopKAT top-mount TopKAT electronic
1200	Closed	None currently supported

SW1-2 or JP2: Mode

If the Series 9800 is controlled by a Gasboy CFN, TopKAT top-mount, or TopKAT electronic fuel management system, the switch must open (on-line mode). If the Series 9800 is controlled by a Gasboy Series 1000 or TopKAT mechanical system, or controlled by any non-Gasboy system, or not controlled by any fuel management system at all, the switch must be closed (standalone mode).

Note: The 9800K is shipped in the standalone mode unless it has the TopKAT top-mount option. With the TopKAT top-mount option, the unit is shipped in on-line mode.

Mode	SW1-2/JP2	Fuel System
On-line	Open	CFN TopKAT top-mount TopKAT electronic
Standalone	Closed	Series 1000 TopKAT Mechanical All non-Gasboy systems No fuel system

SW1-3, SW1-4 or JP3, JP4: Delay Time

These two switches set the delay time used by leak detectors in submersible pump applications. The delay time is the period between the activation of the submersible pump and the activation of the slow flow valve. This time must be set according to the type of leak detector installed on the submersible pump to allow a normal leak test for each transaction. The delay time must be set to zero seconds for suction pumps.

Delay Time	SW1-3/JP3	SW1-4/JP4
0 seconds	Closed	Closed
4 seconds	Closed	Open
5 seconds	Open	Closed
6 seconds	Open	Open

SW1-5 or JP5: Hose Pressurization

If the Series 9800 program is configured for US Gallons, this dip switch setting is ignored and the program will always act as if it is enabled. If the Series 9800 program is configured for Liters or Imperial Gallons, this switch will control whether pump pressurization is enabled. If a pump has been idle for more than ten minutes or this is the first use after start-up, a maximum of 0.02 units of unrecorded volume will be pumped into the pump hydraulics during the pump's segment test.

Pressurization	SW1-5/JP5
Enable	Closed
Disable	Open

SW1-6 or JP6: Authorization

This switch allows activation of the Series 9800 from some types of fuel management systems. When the switch is closed, a 115 VAC (230 VAC international) signal must be present on the AUTH/Control Feed line for pump activation to occur (required setting for Series 1000, TopKAT mechanical, and all non-Gasboy systems). When open, the Series 9800 ignores the AUTH/Control Feed line (normal setting for CFN, TopKAT top-mount, TopKAT electronic, or no fuel system).

Authorization	SW1-6/JP6	Fuel System
Yes	Closed	Series 1000 TopKAT mechanical All Non-Gasboy systems
No	Open	CFN TopKAT top-mount TopKAT electronic No fuel system

JP7 (or SW1-7): Electronic Totalizers

This switch must be open for normal operation. When closed, this switch enables the reset of the electronic totalizers. For more information, refer to "Commercial Electronic (Series 9800 Only)" on page 13.

Totalizers	JP7 (or SW1-7)
Reset	Closed
Normal	Open

JP8 (or SW1-8): RS-485 Emergency Pump Stop Detection

This switch must be set to open (default) to enable RS-485 pump stop detection. The Gasboy RS-485 pump stop switch, when activated, places a serial break character on the RS-485 lines. When SW1-8 or JP8 is open, this breaker character triggers the termination of the sale(s) immediately, if a transaction(s) is in progress.

This switch must be set to closed (in TopKAT or CFN Plus system Communication) to disable RS-485 pump stop detection. This resolves the issue associated with the false break characters being detected that may be introduced when 485 half-duplex communication is used.

ESTOP Detection	SW1-8/JP8
Enabled	Open
Disabled	Closed

JP9 only exists on new boards and is not used.

SW2 (For Older and Newer CPU Boards)

Notes:1) Four-position switch bank only exists in older boards C06394, M05318, M05346 for the Series 9800.
2) Ten-position switch bank only exists on newer Series 9800 CPU Boards M06333A.

For older CPU Board, this four-position switch pack serves a dual purpose:

- As an address setting when communicating using the Gasboy RS-485 PAC Data Protocol (CFN or TopKAT), or
- When using a pulse output board, as a pulser output rate selector for pulser data to be sent to a fuel management system other than a Gasboy CFN or TopKAT.

For newer CPU Board, this ten-position bank serves a dual purpose:

- As an address setting for the Gasboy RS-485 PAC Data Protocol (CFN or TopKAT), Unit of Measure, BDM Enable, Software Load Enable, and Electro-mechanical Totalizer Enable; or
- As a pulse output rate selector when pulser data is sent to a fuel management system other than Gasboy CFN or TopKAT, Unit of Measure, BDM Enable, Software Load Enable, and Electro-mechanical Totalizer Enable.

Address Switches

A unique address identifier must be set when the Series 9800 is connected to the Gasboy RS-485 pump loop via the 9800 RS-485 I/F PCB. There are 16 possible address combinations. Addressing must start at 1 and continue sequentially through 16. The physical wiring order does not have to correspond with the address order, that is, the first unit on the RS-485 loop does not have to be address 1. With the TopKAT top-mounted option, the address must be set to 1. The following chart gives the switch settings and address selections.

Address	SW2-1	SW2-2	SW2-3	SW2-4
1	Closed	Closed	Closed	Closed
2	Open	Closed	Closed	Closed
3	Closed	Open	Closed	Closed
4	Open	Open	Closed	Closed
5	Closed	Closed	Open	Closed

Address	SW2-1	SW2-2	SW2-3	SW2-4
6	Open	Closed	Open	Closed
7	Closed	Open	Open	Closed
8	Open	Open	Open	Closed
9	Closed	Closed	Closed	Open
10	Open	Closed	Closed	Open
11	Closed	Open	Closed	Open
12	Open	Open	Closed	Open
13	Closed	Closed	Open	Open
14	Open	Closed	Open	Open
15	Closed	Open	Open	Open
16	Open	Open	Open	Open

Pulser Output Rate Switches

When the Series 9800 is connected to external control equipment other than a Gasboy CFN, Gasboy TopKAT top-mount or Gasboy TopKAT electronic (standalone), the pulser signals are sent out via the 9800 Pump I/F PCB. The pulse rate required by the monitoring equipment can be configured by setting the switches as shown in the following chart. The pulse rate represents pulses per gallon (PPG for US Gallons and Imperial Gallons) or pulses per liter (PPL, most international). For US Gallons or Imperial Gallons configurations, the pulse rate can be up to 100 PPG for the 9850 and 500 PPG for all others models. For liters configurations, the pulse rate can be up to 10 PPL for the 9840 and 9850, and 100 PPL for all other models. For Imperial Gallons configurations, the pulse rate can be 100 PPG for the 9850 and 500 PPG for all other models. This switch must be sealed by a Weights and Measures paper seal if the Series 9800 unit is used for the resale of product.

Leading zeroes are always suppressed in the hundreds and tens positions to the left of the decimal point. When in standalone mode, positions to the right of the decimal point are displayed based on the pulse rate selected as shown in the following table.

Pulse Rate	SW2-1	SW2-2	SW2-3
1	Closed	Closed	Closed
10	Open	Closed	Closed
100	Closed	Open	Closed
250	Open	Open	Closed
500	Closed	Closed	Open
None	Closed	Open	Open
None	Open	Open	Open

Note: For the last two switch settings, no pulse will be sent to the Fuel Management System.

Pulse Rate	9800/9840 Display Layout	9850 Display Layout
1:1	XXX.	XXXX.
10:1	XXX.X	XXXX.X
100:1	XXX.XX	XXXX.XX
250:1	XXX.XXX	XXXX.XX
500:1	XXX.XXX	XXXX.XX

Time-out Switch

When the Series 9800 is in standalone mode, it will turn off an active hose if it does not detect pulses for four minutes, 15 seconds. This time-out feature can be disabled by setting switch SW2-4 to OPEN.

Timeout	SW2-4
Enabled	Closed
Disabled	Open

SW2-5 and SW2-6: Unit of Measure Setting (New M06333KXXXX CPU Only)

These two switches select the Unit of Measurement: US Gallons, Imperial Gallons, and Liters. For information, refer to the following table.

Unit of Measure	SW2-5	SW2-6
US Gallons	Closed	Closed
Liters	Open	Closed
Imperial Gallons	Closed	Open
N/A	Open	Open

SW2-7: Electro-Mechanical Totalizer Enable (New M06333KXXXX CPU Only)

The K model pumps/dispensers have an option to use Electro-mechanical Totalizers. If these are installed, then this switch must be set to CLOSED for proper operation of the totalizers. This switch does not affect the operation of the electronic totalizer or the mechanical totalizer.

EM Totalizer	SW2-7
Enabled	Closed
Disabled	Open

SW2-8: BDM Enable (New M06333KXXXX CPU Only)

This switch must always be set to OPEN for normal operation.

SW2-9: Software Download Enable (New M06333KXXXX CPU Only)

This switch must be OPEN for normal operation. When this switch is closed, it enables loading new M06333KXXXX CPU software.

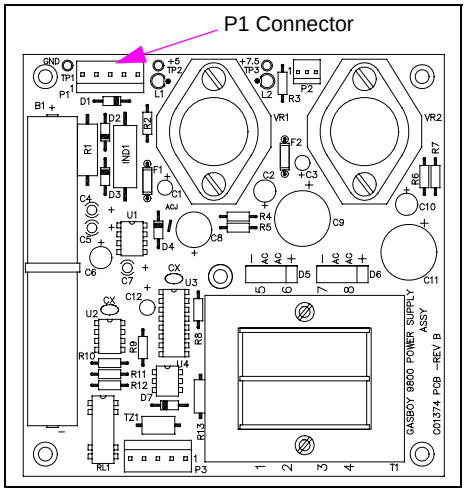
Software Download Enable	SW2-9
Enabled	Closed
Disabled	Open

SW2-10 (New M06333KXXXX CPU Only)

This switch is not used.

Battery Backup Power Supply for Series 9800

Figure 3-14: 9800 Series Power Supply



Series 9800 models can be equipped with an optional battery backup power supply. This allows the last transaction data to be displayed for a minimum of 15 minutes. After the batteries reach a certain low-voltage point, the power will automatically shut-off. If you have to shut-off the battery power before the low-voltage point is reached, momentarily disconnect and then re-connect the cable that plugs into P1 on the power supply.

The Atlas DEF 9862 cold and warm weather units do not use the battery on the power supply.

Information for ATC (Series 9800 Only)

By activating the magnet located at the opposite side of the totalizer, various items will appear on the display.

1.	Volume Display	Displays uncompensated volume	0023.43
2.	Probe Temperature	Display Displays probe temperature in Celsius only	023.2
3.	Flow Rate Display	Displays Flow Rate (in LPM only)	189.2
4.	Software Version Display	Displays software version number	1.30
5.	ATC Status Display	Displays ATC Status	842.2

On the ATC Status Display, the rightmost digit (2) indicates whether the temperature compression is enabled or not. If enabled, it shows which product is being dispensed.

- 0=temperature compensation enabled
- 1=product is gasoline and compensation enabled
- 2=product is diesel and compensation enabled.

Note: Not used in the Atlas DEF 9862 units.

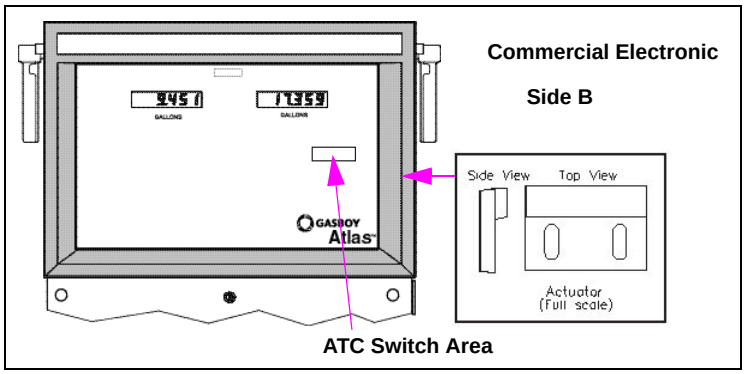
On the ATC Status Display, the leftmost digits (842) are error indicators which are blank when the corresponding error condition is not active. When any of the following digits are displayed:

- 8=temperature probe fault is detected
- 4=pulser error occurred
- 2=exceptional reset was detected

Setting the DIP Switches (Found on Kraus ATC Boards)

DIP Switch Settings		
Switch Number	**Switch Function**	**Settings for 9800 Series**
1	Product 1	ON=Diesel; OFF=Gasoline
2	Product 2	ON=Diesel; OFF=Gasoline
3	Not Used	
4	9840K, 9852K, and 9853K	ON=Liters; OFF=Gallons
5	Pulser Multiplier	ON=9850; OFF=9852/9853
6	# of Probes	ON=2, OFF=1
7	Pulser Adder	ON=9840
8	ATC	ON=ATC on; OFF=ATC off

Figure 3-15: Setting the DIP Switches



Changing the Price for the Mechanical Retail Pump

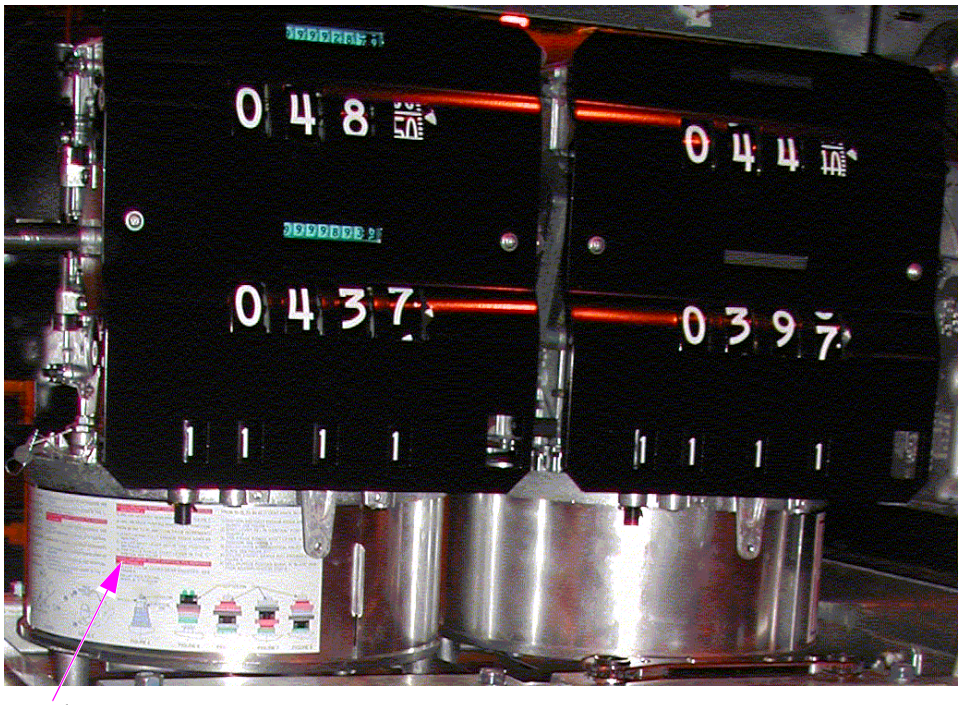
Atlas (Gallon unit of measure)

Temporary pricing must have already been entered into the unit as outlined in the purging section to allow dispensing and calibration. Follow the procedures given below:

- Current production Atlas pumps/dispensers are pre-calibrated to US gallons and programmed to default programming values.
  Note: Calibration verification is still required.

- They may be operated and purged in normal mode after entering the prices (add pricing programming information from service manual or for mechanical units, from the directions on the outside of the computer).
- Purging can be performed for units eventually to be converted to metric mode, when the unit is in the gallon mode.

Figure 3-16: Mechanical Retail Pump PPU



Note: Directions for changing the price can be found on the outside of the variator cover.

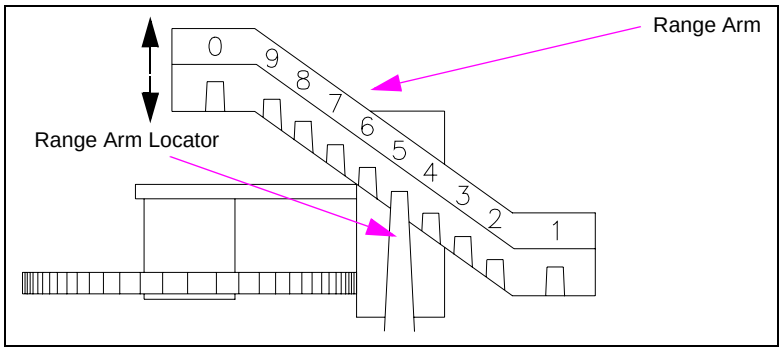
Note: This section and the diagrams pertain to the mechanical models only.

1 Unlock and remove the front panel. Repeat this procedure for the other side.

2 The variator section of the computer register(s) is exposed to allow price changes. Slide the variator cover of the computer register apart, to expose the price range arms.

3 There are three range arms located in the variator section. One sets the tenths of a cent position, one sets the one cent position, and the last one sets the ten cents position. To change a setting, grasp a range arm and raise it to clear the range arm locator, and relocate the range arm to the required setting. Ensure that the range arm is totally bottomed on its setting. Repeat this for all range arm settings, if required.

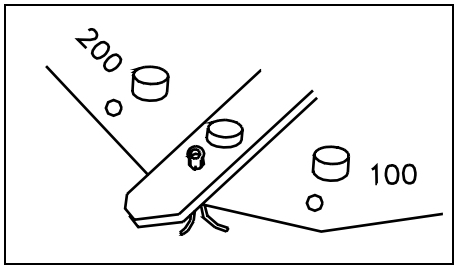
Figure 3-17: Location of Range Arms



4 To change the money unit setting, locate the control lever which is located above the variator section on the same level as the price display. There are three available positions: 0.00, 1.00, and 2.00. Remove the cotter pin, grasp the lever, and raise it slightly to clear the position locators. Position the lever to the required setting and release. Reinsert the cotter pin through the lever and plate.

Note: If the lever does not move to the required position, rotate the right hand money wheel until the lever is free to move.

Figure 3-18: Control Lever



5 If you have difficulty reaching the money shift lever when changing prices, remove the two cap screws located over the tabs of the bezel assembly. Lift the bezel assembly upward and remove it from the unit. When reattaching the bezel to the dispensing unit, ensure that the top inner edge of the bezel assembly slides into the “U” shaped channel located on the upper edge of the dispensing unit.

Programming 8800 Models

General Programming

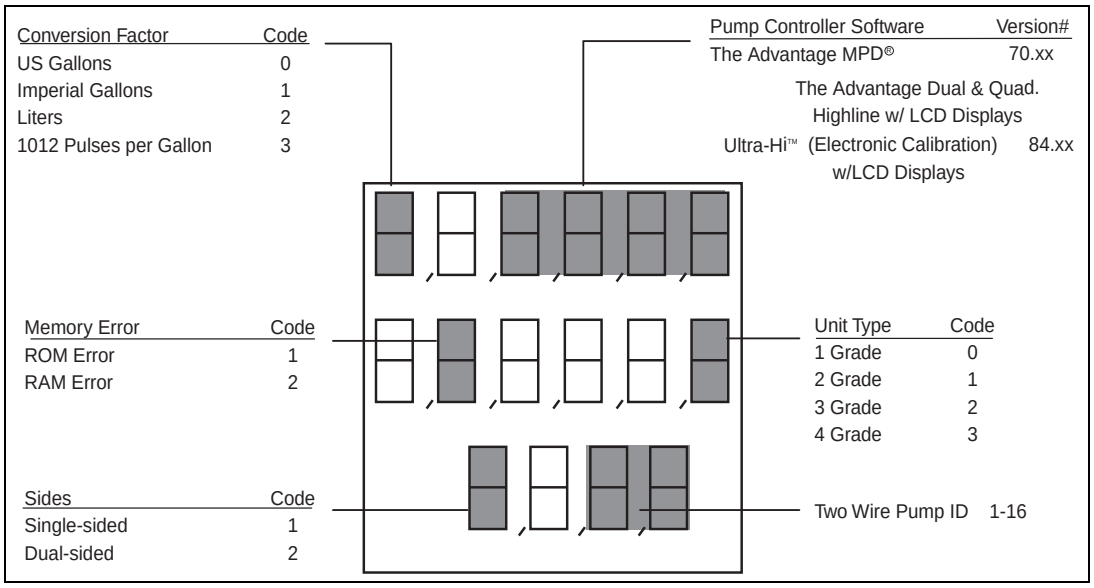
Programming the unit is divided into three levels; Level 1, 2, and 3. Level 1 codes are explained here. The default code for level 1 is 2222. This code can be changed for station security, however losing the codes will require a master reset of the unit. Reprogramming codes found in Level 1 are shown below:

- CC 1 Manual programming of PPU (unit pricing). Pricing can also be downloaded through the Two-wire communication using the Point Of Sale (POS) device.
- CC 2 Sitting mode of operation as being stand alone (isolates sale control from the POS) or Two-wire (unit control through the POS).
- CC 3 Programming Volume Allocation. This basically sets the maximum sale size in units of measure (gallons for example).
- CC 4 Manual Blank and Five-Button Preset. This dual use code allows turning the displays off manually or is used to activate different preset modes depending on the options included with the unit.
- CC 5 Test Programmable Customer Preset. This code is used to initiate testing for the 5 Button Preset option, if used.
- CC 6 Memory Clear. This code is useful only to clear a unit displaying an Error Code (EC) 31 Totals Data Error) or EC 35 Configuration Data Error.
- CC 7 Setting Totals Input. This code allows setting of non zero totals. It is useful for new installs or service (old dispensers are replaced or receive certain types of service), when the station does not want to restart totals for its dispensers at zero. It can only be performed after performing a master reset, CC7, or for new units.
- CC 8 display Pump Controller Firmware Version.

Programming the 8800 Series Retail Electronic Units

This section describes the level 1 programming procedures and considerations for the 8800 series.

Figure 3-19: Programming of 8800 Series Retail Electronic Units



Level 1 Programming and Data Access

Figure 3-20: Manager's Keypad

MANAGER'S KEYPAD

Manager Keypad Key Definitions and Use

Key(s)	Definition/Use
0-9	Numeric Values
F1	Function 1 – Used to start dispenser programming and sequence among programming and function codes. In general, each depression of F1 key will take user back to a previous programming function selection. Depressing F1 from the normal dispenser state will always initiate programming mode. *Note: Displays are always activated during programming mode.*
F2	Function 2 – Used to exit programming mode and return to normal mode.
$Totals	Money Totals – Used to display money totals by side and grade. This key does not require a security code. **CLEAR** key is used to exit money totals mode.
Vol. Total	Volume Totals – Used to display volume totals by side and grade. This key does not require a security code. **CLEAR** key is used to exit volume totals mode.
ENTER	Value entry keys – sends the entered value to pump.
CLEAR	Clear key – Used to clear last keypad entry, and exit money and volume total mode.

Pin Code Entry

- Press **Fl**.
- Enter 4-digit ID (default is 2222) and press **ENTER**.
- Press **F1** to exit any command code.
- Press **F2** to return to normal operation.
- From Level 1 after entering pin code, you may enter any command code directly.

Command Code 1: Program PPU

- Press **1** and then press **ENTER**.
- Select Side (1 or 2) and then press **ENTER**.
- Select **Grade** and then press **ENTER**.
- Select **Price Level** and then press **ENTER**.
- Enter new PPU and then press **ENTER**.

(Repeat for other Side, Grade, and Price Level)

Command Code 2: Program Two-Wire/Standalone

- Press **2** and then press **ENTER**.
- Press Configuration number and then press **ENTER** where

  0 = Standalone mode
  1 = Two-wire mode (default)
  2 = Pulse Output mode

Command Code 3: Program Allocation

- Press **3** and then press **ENTER**.
- Select Side (1 or 2) and then press **ENTER**.
- Select **Hose/Grade** and then press **ENTER**.
- Select Allocation amount and then press **ENTER**.

(Repeat for other Side, Hose, and Grade)

Command Code 4: Program Manual Blank Display Cash/Volume Preset Select

- Press **4** and then press **ENTER**.
- Select Function Code (1 or 2) and then press **ENTER** where

Function Code 1: Manual Blank Displays

Press option code and then press **ENTER** where

0= Display OFF

1= Display ON

Function Code 2: Cash/Volume Preset Select

Press option code and then press **ENTER** where

0= No 5 Button Preset or PPP Preset installed

1= Money Preset

2= Volume Preset

3= Incremental Preset

Command Code 5: Test Customer Programmable Preset

Press **5** and then press **ENTER**.

Select Configuration and then press **ENTER** where

0= STOP Test/Program

1= START Test/Program

Depending upon the preset option type testing will convey the following when pressing the preset buttons:

Five Button Preset (Non-Customer Programmable Preset)

Press **ENTER** after making selections.

1: Program Button 1 (Default 1)

2: Program Button 2 (Default 5)

3: Program Button 3 (Default 10)

4: Program Button 4 (Default 15)

Incremental Preset (Non-Customer Programmable Preset)

Press **ENTER** after making selections.

1: Program Button t (Default 1) Money

2: Program Button 2 (Default 5) Money

3: Program Button 3 (Default 10) Money

4: Program Button 1 (Default 1) Volume

5: Program Button 2 (Default 5) Volume

6: Program Button 3 (Default 10) Volume

(After test is complete, follow programming steps to setup.)

Command Code 6: Memory Clear For Error Code 31 or 35

- Press **6** and then press **ENTER**.
- Press **1** and then press **ENTER**.

Command Code 7: Program Totals Input

- Press **7** and then press **ENTER**.
- Select Side (1 or 2) and then press **ENTER**.
- Select **Grace #** and then press **ENTER**.
- Press **$ Total**.
- Enter money total and then press **ENTER**.

(Repeat for other side and grade)

Press **Volume Total** and repeat above procedure for volume totals.

Command Code 8: Display Version Number

Enter **8** and then press **ENTER**.

Select **Software Option** and then press **ENTER** where

1= Pump Controller

3= Customer Programmable Preset

Command Code 18 FC 1: Volume Pulse per Unit Programming

1 = 1

2 = 10 (default)

3 = 50

4 = 100

5 = 1000

Command Code 18 FC 2: Volume Pulse Width Programming

1 = 0.5ms

2 = 1.0ms

3 = 2.0ms

4 = 4.0ms (default)

5 = 17.0ms

6 = 19.0.ms

7 = 26.0ms

8 = 150.0ms

Command Code 18 FC 3: Money Pulse Width Programming

1 = 0.5ms

2 = 1.0ms

3 = 2.0ms

4 = 4.0ms (default)

5 = 17.0ms

6 = 19.0.ms

7 = 26.0ms

Command Code 18 FC 4: Volume Suppression Programming

1 = 0.030 (default)

2 = 0.009

3 = 0.000

Command Code 18 FC 5: Quad Pulse Option Programming

0 = Disabled (default)

1 = Enabled

Command Code 18 FC 6: Authorize after Pump Stop Option Programming

0 = Disabled (default)

1 = Enabled

Command Code 18 FC 7 = PRC Restore Option Programming

0 = Disabled (default)

1 = Enabled

ATC Programming

At power-up, units programmed with the ATC option flash 104 before displaying normal information. Units with this option but not programmed for ATC, flash 100. To program the ATC option, proceed as follows:

1 Turn on the programming switch on the ATC controller board.
Note: The dispenser must not be used during this programming and all pump handles must be down or inactive.

2 Press **100** on the keypad and then press **ENTER**.
- The money position (showing fueling position selected) displays 1
- The volume position (showing the fuel type selected) displays 1 where
  a. 1 = Gasoline
  b. 2 = Diesel
- The PPU position (showing fuel density selected) displays 730 where
  a. 740 = Gasoline
  b. 840 = Diesel
  c. Default = 730

3 Select the fuel type and press **ENTER**.

4 Each fueling position is sequenced through by the firmware sequence. Select the fuel type for each position (Diesel or Gasoline).

5 Turn the programming switch on the ATC controller board off.

6 Press **F2** to exit the ATC programming mode.

ATC Inspection Mode

Inspection of ATC states and data collection can be obtained by following a similar procedure as outlined for “ATC Programming” on page 38. Instead of pressing 100, other codes can be used as described in Figure 3-21.

Figure 3-21: ATC Inspection Modes

ATC INSPECTION MODES

On Manager Keypad, press the ATC Function Code below when unit is idle. Note that all pump handles must be down or inactive. Then, press ENTER, meter number if appropriate, then ENTER. Exit by pressing F1.

FUNCTION CODE	DESCRIPTION	MAIN DISPLAY	VOLUME DISPLAY	GRADE 1 PPU DISPLAY
300	AUDIT LAST TRANSACTION	GROSS VOLUME	NET VOLUME	AVERAGE TEMPERATURE
301	DISPLAY VOLUME CORRECTION FACTOR	METER NUMBER		VOLUME CORRECTION FACTOR
302	DISPLAY FUEL DENSITY	METER NUMBER		730 GAS 840 DIESEL
303	DISPLAY TEMPERATURE	METER NUMBER		CURRENT TEMPERATURE
304	DISPLAY GROSS TOTALS		GROSS VOLUME (most significant)	GROSS VOLUME (least significant)
500	DISPLAY SOFTWARE VERSION	ATC VERSION		
200[1]	REAL-TIME TRANSACTION MODE	GROSS VOLUME	NET VOLUME	CURRENT TEMPERATURE

Figure 3-22: Manager’s Keypad

MANAGER’S KEYPAD

Displaying Pump Totals

During service, it is often required to access pump totals. This can be done at the POS or at the pump/dispenser. Access is simple through the manager keypad.

To View Side 1 Totals:

1 Press **$TOTAL**. Combined cash and credit total appears for Grade 1, Side 1.

2 Select **grade**. Read $TOTAL for each grade selected.

3 Press **VOL TOTAL**. The volume total appears for the grade selected.

4 Select **grade**. Read volume totals for the grade selected.

5 Press **Enter** to view Side 2 totals.

6 Press **Clear** to exit.

Error Codes and Interpretations for 8800 Retail Electronic Units

These codes are useful when troubleshooting a problem. Side A is the junction box opening and Side B is the opposite side. You may observe the following errors.

Error Code	Description
31	Totals Data Error
35	Configuration Data Error
44	Pump Handle Up at Power Up

To recover, lower the handle resulting in end of sale and restart new sale.

Shear Valve

⚠ WARNING

High alcohol percentage fuels such as E85 or fluids such as DEF may be incompatible with certain plumbing materials and hydraulic components.

Use of incompatible materials or components with E85 can result in leaks. For E85, unexpected failures of components may also occur resulting in fire or explosion or environmental damage. When installing components in E85 units, refer to “Important Requirements for E85 Units” on page 15.

When dispensing alternative fuels such as E85 or fluids such as DEF, verify with the manufacturer if the material of all plumbing components are compatible with the fuel (E85) or fluid being dispensed.

Note: The Atlas 9862 utilizes a special shear valve manufactured by OPW, model 60.

CAUTION

Applicable to Dispensers Rated for E85 Use:
Do not use tape at the very end of the pipe nipple to avoid tape entering the dispenser hydraulics. Tape in the hydraulics can cause failures of valves, nozzles, or other significant problems.

Use only UL-listed TPS PTFE Pipe Sealant manufactured by SAF-T-LOC International Corp.

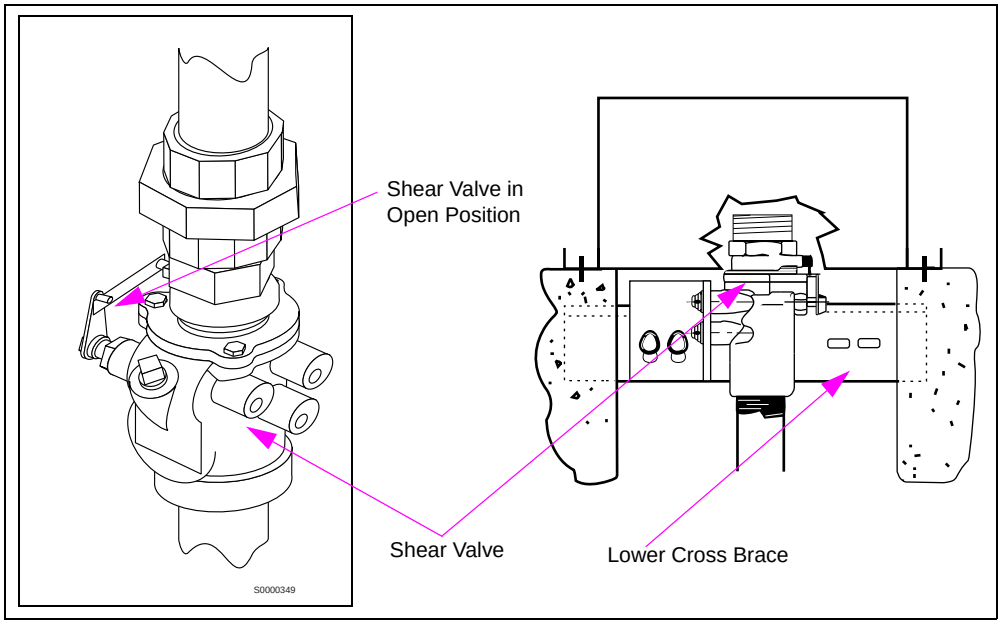
Use only UL-listed Taega Technologies Inc. Teflon tape.
*Note: Teflon tape must be used **only** at the inlet pipe connection.*

Shear valves, required by NFPA 30A, are intended to shut-off the flow of fuel at the dispenser base (hydraulics area) during vehicle impact or fires. A single-poppet shear valve prevents the fuel flowing from the underground tank. A double-poppet shear valve prevents fuel flowing from the underground tank and the dispenser. In an event that the product fails to exit the dispenser/pump hose, ensure that the shear valve is not closed.

A shear valve in the open position is shown in Figure 3-23.

Note: The shear valve is located inside the dispenser on the lower cross brace in the pit box area.

Figure 3-23: Open Position of Shear Valve



⚠ WARNING

Shear Valves may stick parochially in the open position causing fuel to flow through a shear valve thought to be closed. Always test for proper closing by attempting to dispense fuel into an approved container. Fuel must not continue to flow after pressure has been relieved.

For maintenance information, refer to “Preventive Maintenance Table” on page 60.

Figure 3-24: Closed Position of Shear Valve

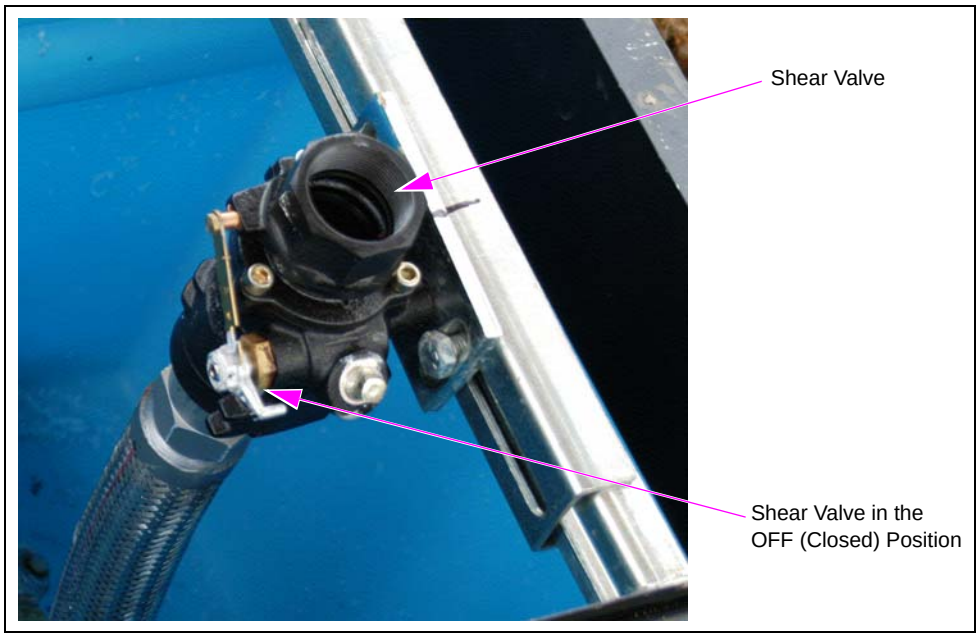
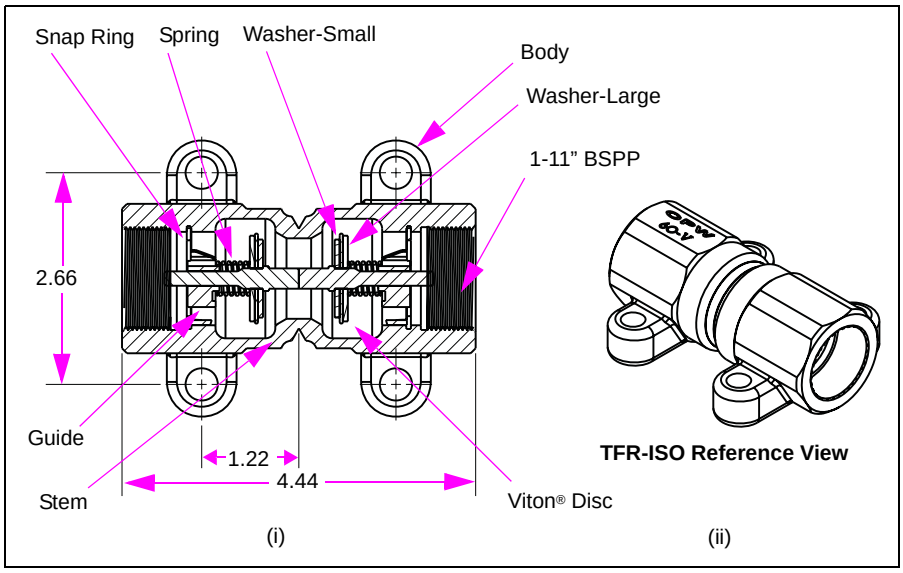


Figure 3-25: OPW Model 60 Shear Valve



Operating Sequence for Series 9100 Only

Pump

1. AC Power (115/230 VAC International) must be provided to the pump motor feed. Reset the motor feed (slow flow/reset motor feed, if applicable).

2. When the pump handle is switched on, power (115/230 VAC International) is supplied to the electric reset motor, which immediately begins to reset the values on the pump's non-computer register to zero.

3. When the reset is complete, power is removed from the reset motor and the internal switches in the reset unit change to the normally open contacts. This supplies power (115/230 VAC International) to the pump motor and to the reset complete line. If this pump contains a slow flow/fast flow or closure type solenoid valve, the valves will open at this time.

4. The user begins to dispense fuel.

5. The register displays the total volume. If an optional pulser kit is attached, it supplies pulses which may be recorded by an external Fuel Management System such as the Gasboy Series 1000.

6. The fueling transaction continues to run until the user turns off the pump handle.

Remote Dispenser

1. AC power (115/230 VAC International) must be provided to the submersible feed and slow flow/reset motor feed. If a submersible starter relay is used, AC power (115/230 VAC) must be supplied to the input contacts of the submersible starter relay.

2. When the pump handle is switched on, power (115/230 VAC International) is supplied to the electric reset motor which immediately begins to reset the values on the pump non-computer register to zero.

3. When the reset is complete, power is removed from the reset motor and the internal switches in the reset unit change to the normally open contacts. This supplies power (115/230 VAC International) to the submersible starter relay, which in turn closes and supplies power to the submersible motor. If a starter relay is not used, the hot leg is supplied directly to the submersible motor. The remote dispenser contains a slow flow/fast flow or closure type solenoid valve, which opens at this time. At the same time that the valve opens, the Reset Complete line goes to 115/230 VAC International.

4. The user begins to dispense fuel.

5. The register displays the total volume. If an optional pulser kit is attached, it supplies pulses which may be recorded by an external Fuel Management System such as the Gasboy Series 1000.

6. The fueling transaction continues to run until the user turns off the pump handle.

Operating Sequence for Series 9800 Only

The exact sequence of events that occur during the operation of the pump or remote dispenser is determined by various switch settings, inputs, and the user. A typical transaction is explained below:

Pump Unit - Motor and Pump in Unit Base

1 Turn on the pump handle. If AC is present on the AUTH/Control Feed line, the reset cycle begins. The display (electronic units):
- Goes blank for one second if 0 Delay Time is set, or for 4-6 seconds depending on the setting Delay Time is set to.
- Shows all 8s for one second [three seconds for US Gallons or if JP5 (or SW1-5 for older CPU boards) is set].
- Goes to 0.000 (gallons) or 0.00 (liters) until fuel starts.

The pump motor switches on and the Reset Complete line becomes active.

2 The pump continues to run until one of the following conditions occur. These conditions switch off all relays as follows:
- The handle is turned off.
- The AUTH/Control Feed line (AC power line to pump/dispenser) is switched off by the POS.
- A pulser error is detected (electronic units only).
- A time-out is reached (if the unit is programmed with a time out value). If connected to a fuel management system, the time-out loaded into the system is used (commercial electronic only). The unit turns off if it is idle for a preprogrammed time when no fuel is flowing.
- A quantity of 990.000 gallons (9900.00 liters) is reached. If connected to a fuel management system, the limit set in the system is used.
- The pump is halted by an operator of a fuel management system.
- An AC power failure occurs.
- Station Emergency Stop button is pressed.

Dispenser Units - Fueling Unit with No Motor and Pump in the Bottom

1 Turn on the pump handle. If AC is present on the AUTH/Control Feed line, the reset cycle begins and the submersible pump switches on. The display (Electronic Unit):
- Goes blank for one second.
- Shows all 8s for one second [3 seconds for US Gallons or if JP5 (or SW1-5 for older CPU boards) is set].
- Goes to 0.000 (gallons) or 0.00 (liters) and remains until fueling begins.

The display (mechanical units)
- Resets to 0.000 (gallons) or 0.00 (liters).

2 The user begins to dispense fuel.

3 The remote dispenser continues to run until one of the following conditions occurs. These conditions turn off all relays as follows:
- The handle is turned off.
- The AUTH/Control Feed line is turned off (AC power line to pump/dispenser) is turned off at the POS.

- A pulser error is detected (electronic unit only).
- A time-out is reached (if the unit is programmed with a time out value). If connected to a fuel management system, the time-out loaded into the system will be used (commercial electronic only). The unit will turn off if it is idle for a preprogrammed time when no fuel is flowing.
- (9800 models) A quantity of 990.000 gallons (9900.00 liters) is reached. If connected to a fuel management system, the limit set in the system will be used.
- The pump is halted by an operator of a fuel management system.
- An AC power failure occurs.
- Station Emergency Stop button is pressed.
- Calibration error (DEF or E85 units only)

Standalone Mode Error Handling (Series 9800)

When operating the pump/dispenser in the standalone mode (not connected to a fuel management system), the Atlas displays two or three digit error transaction codes on the LCD displays when transactions are terminated abnormally (by a means other than turning off the pump handle).

The possible error conditions that may be displayed are listed in the following table.

Code	Condition
55	Power failure
56	Pulser error
57	Timed out
58	Limit cutoff
59	9840 Only - Flow error unit 1
60	9840 Only - Flow error unit 2
993	9860 or 9870 Only - Calibration error

The error codes are displayed for two seconds at the left of the LCD window, alternating with a five-second display of the last sale amount. The display alternates between the two until a new transaction begins (In the case of a 993, new transaction will NOT start until the error is cleared.). When an error occurs, the user must note the error code and relay the information to the ASC.

Transaction error codes are displayed only when the pump/dispenser is operating in standalone mode. When connected to a fuel management system, (on-line mode), transaction error codes are transmitted back to the fuel management system with the completed transaction data.

Calibration for 9850 Only

All Gasboy pumps and remote dispensers are adjusted for accurate measure at the factory. However, since the conditions of the installation can affect pump accuracy, it is the responsibility of the installer to inspect the pump for accuracy and make the required adjustments. When required, it is the owner’s responsibility to report this device to the local Weights and Measures officials for their inspection before the unit is put into service. Calibration methods are given in gallons. When calibrating liter pumps, the same procedure is used, but gallons is converted to liters (1 gallon = 3.78 liters, 1 gallon = 0.83267 US Imperial gallons).

9850K and 9850KX Models

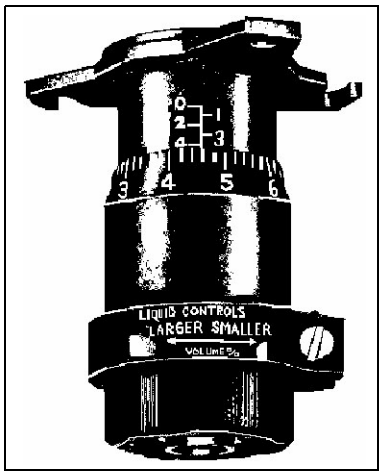
To adjust the calibration for 9850K and 9850KX Models, proceed as follows:

1 Inspect the meter registration by delivering the product to a reliable, accurate, 50, or 100 gallon (or metric equivalent) Prover Can.

2 Convert the amount of error to gallons per 100 (provides a percent figure) or gallons per thousand (provides one-tenths of a percent figure).

3 Read the setting indicated on the adjuster. The amount of error is added to or subtracted from this setting. The adjuster is shown in graduated divisions of 1%, 0.1%, 0.02%.

Figure 3-26: Models 9850K and 9850KX



4 Reset the adjuster by loosening the clamp.

To decrease the amount delivered, turn the thimble in on the barrel.

To increase the amount delivered, turn the thimble out (unscrew it). After resetting the adjuster, tighten the clamp.

Note: Always make the final adjustment by turning the thimble in. If the new setting is a higher number than the original, turn it back beyond the required figure and come back to it.

For example: Assume that the adjuster setting at the start of the test reads 2.05. The product is run through the meter into a Prover Can until the counter registers 100 gallons. Assume that the Prover Can shows a volume of 98.7 gallons (1.3 gallons short). Since the adjuster graduations are in percent readings, this 1.3 could be added directly to the adjuster reading (2.05 plus 1.3 equals 3.35 on the adjuster). A rerun through the meter must then show 100 gallons both on the meter counter and on the Prover Can.

If you are measuring in increments of less than 100 gallons, use this simple formula to determine the percentage by which the adjuster must be adjusted:

(P - M)/M = A%
where **P** is the prover measurement, **M** is the meter reading, and **A%** is the percent adjustment for the adjuster.

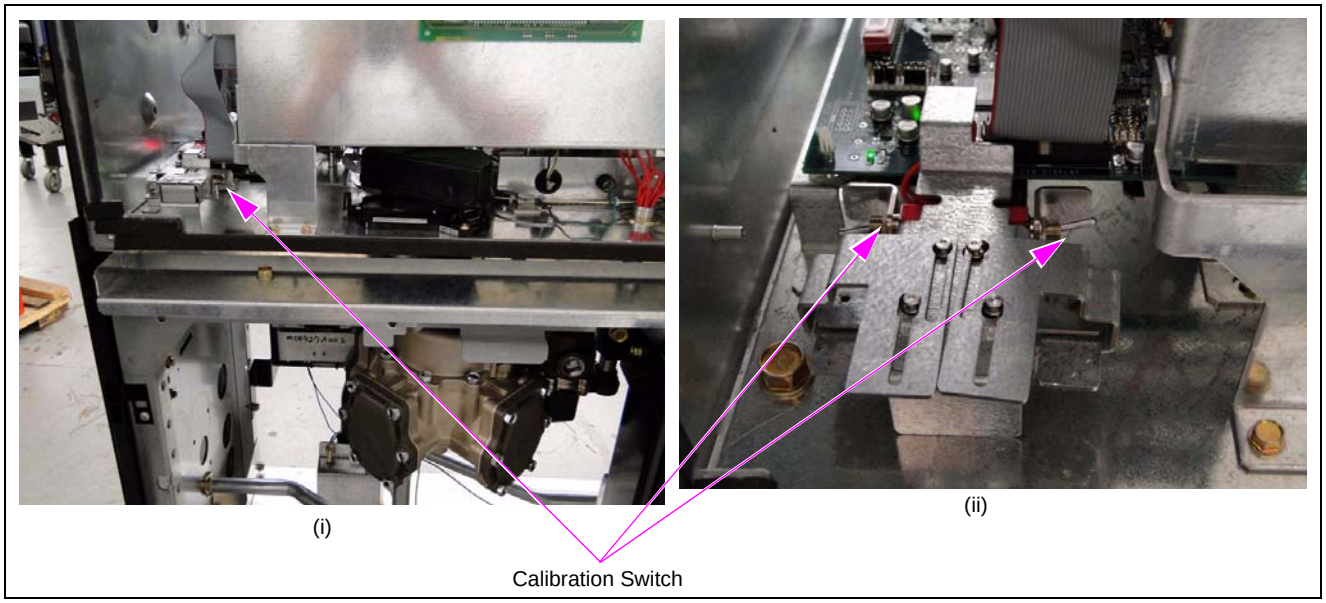
Calibration Adjustment for E85 and DEF Units [Electronic Calibration (ECAL)]

E85 and DEF units must be calibrated electronically. To perform the Electronic Calibration (ECAL), proceed as follows:

Notes: 1) If the unit is two-sided, then the calibration procedure must be performed individually on each side.

2) The calibration switch is located on the junction box side of all three E85 unit types (see Figure 3-27).

Figure 3-27: Calibration Switch and Junction Box



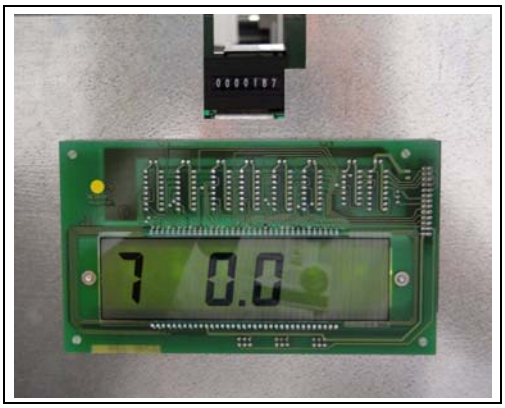
1 Slide the back cover and turn the Calibration switch to "Calibrate" position (up).

a Locate the calibration assembly, slide the W & M seal metal cover towards the exterior of the unit.

b Locate the inside switch for side B, or the outside switch for side A. Place the switch in the up position to activate the calibration procedure.

The number "7" appears in the Most Significant Digit (MSD, left most digit) of the pump display and will remain throughout the procedure (see Figure 3-28).

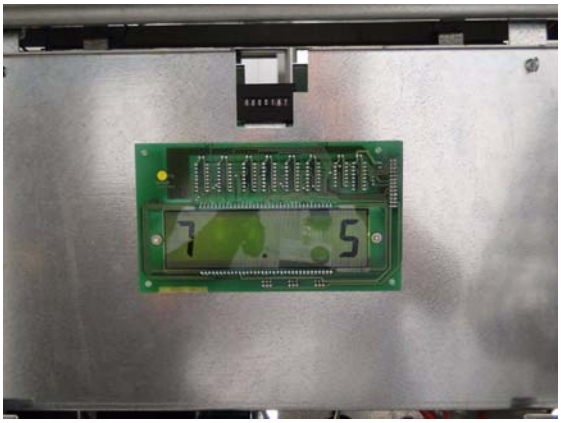
Figure 3-28: Turning on the Calibration Switch



After five seconds, a can size appears in the two Least Significant Digits (LSD, digits to the far right) of the pump display (see Figure 3-29). The can size will appear for five seconds before advancing to the next can size. The display will continue to scroll through can sizes until the nozzle is removed and the pump handle is switched on.

Note: If the nozzle is not removed within 10 minutes of turning the switch to "Calibrate" position, Error Code 574 appears (57 indicates time out, and 4 indicates calibration mode error). Turn the Calibration switch to "Off" position (down), to clear the error.

Figure 3-29: Displaying the Can Size



2 **After the required can size appears on the display, remove the nozzle and switch on the pump handle.** This selects the can size for calibration.

Notes: 1) If the pump handle is switched on for an inappropriate can size and if the dispensing has not started, switch off the pump handle. Scrolling will resume. If dispensing has begun, switch off the pump handle, turn the Calibration switch to "Off" position, and restart calibration from step 1 on page 47.

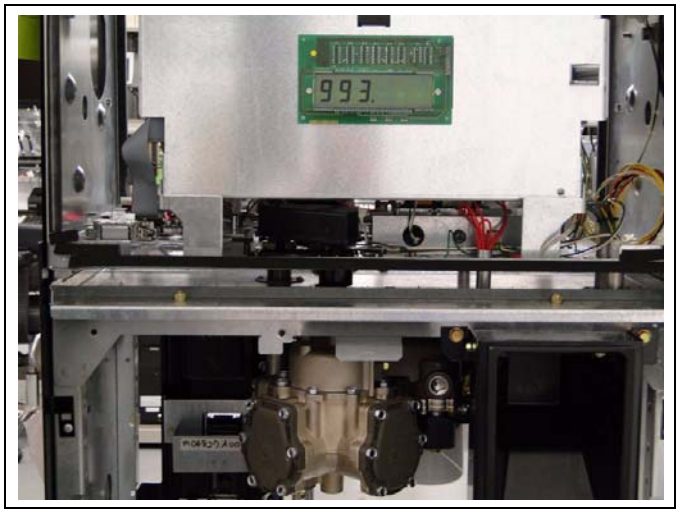
2) Must use an approved prover can for DEF calibrations.

3 **Dispense fuel into the Prover Can exactly to the zero mark.** The uncalibrated volume appears.

Notes: 1) If the fuel/DEF is not dispensed within four minutes (approximately) of switching on the pump handle (or within the time period set by the controller for pulser time out), the Error Code 574 appears indicating that the pump handle must be switched off to clear the error. Scrolling will resume after you replace the nozzle.

2) If fuel/DEF dispensing has started but stopped and the pump times out, the Calibration switch must be turned to "Off" position. Else Error Code 993 appears as shown in Figure 3-30 on page 49 (99 indicates that the product is not available, and 3 indicates the product is not calibrated). The procedure must then be restarted from step 1 on page 47.

Figure 3-30: Displaying the Error Code



4 **Switch off the pump handle and return nozzle to boot.** After three seconds, the calibration factor appears on the display for three seconds and then zeros are displayed indicating that the meter is now calibrated. No further transactions will be allowed until the Calibration switch is turned to "Off" position.

Note: If an additional transaction is attempted, Error Code 994 appears (99 indicates product not available, and four indicates calibration mode error). Turn the Calibration switch to "Off" position and switch off the pump handle to clear the error. The Error Code 993 appears indicating that the Calibration procedure must be restarted from step 1 on page 47.

5 **Turn the Calibration switch to "Off" position and slide switch cover back over switch.**

Series 9800 Start-up Error Codes

The following Series 9800 start-up codes constantly appear at the far left on the power-up:

- 01-RAM Failure-RAM read/write tests failed
- 02-ROM Failure-bad ROM chip and checks failed

Start-up and Test Section for Series 9800 (except 9820)

Installation Completion Checklist

Review the following information to verify the proper installation of the Series 9800K dispensing unit. If the installation does not meet the criteria listed, correct the problem before the start-up is performed.

1 To avoid damage to the CPU PC board, verify that the RESET COMPLETE, FAST FLOW, SUBM. STARTER DRIVE, and SLOW and FAST SATELLITE RETURN wires are not shorted to the conduit or chassis.

2 The unit must be secured to the island properly.

3 All plumbing must be complete and tight. All liquid-carrying lines must be checked for leaks.

4 When DC pulser or RS-485 lines are used in the pump for connecting to Gasboy fuel management systems, the AC and DC wires must not share any conduits, junction boxes, or troughs.

5 All conduit work must be complete. All junction box covers must be secured. Conduits must not be sealed until the wiring is verified through proper operation.

6 The unit must be grounded properly.

7 Before any testing begins, remove any water in the tank through a fill opening, using a suitable pump.
Note: Do not use the Gasboy pump or remote dispenser and submersible pump to remove water. Serious damage may occur.

8 A sufficient volume of fuel must be put in the tank to insure that the liquid level is above the bottom of the suction pipe (suction pumps) or is high enough to allow the submersible pump to operate efficiently (remote dispensers).

Start-up

After successfully verifying the installation against the completion checklist, the unit is ready for start-up. To perform an orderly start-up of the Series 9800K, proceed as follows:

1 Verify if all switches on the CPU PCB are set properly for the various operating conditions.

2 Turn the circuit breakers on for the microprocessor and fluorescent lights. Verify if both lights are lit.

3 Authorize the hose for Side 1 through the fuel management system, if available.

4 Remove the nozzle for Side 1 from its holder and turn the pump handle on. Verify that the display goes through the reset sequence as explained in “Operating Sequence for Series 9800 Only” on page 44.

5 Dispense fuel. Verify that the high flow valve opens, if equipped. Inspect all plumbing for leaks at this time.

6 Turn the pump handle off. Open the nozzle. No fuel must be dispensed at this time.

7 Verify if the correct quantity was recorded by the fuel management system, if available.

8 If applicable, repeat steps 3 to 7 for Side 2.

9 Run the unit through all standard calibration procedures.

10 Reset the electronic totalizers as described in “Commercial Electronic - 9800” on page 9.

POST Start-up Tests

Voltage

The incoming voltage to the pump and remote dispenser must be inspected and any reading that is not within 10% of the rated voltage must be corrected before the testing is continued. When dealing with suction pumps, it is a good practice to take voltage readings while the suction pump is operating on bypass and also while making a delivery. Any voltage drop in excess of 10% during either of these operating states must be considered a low voltage condition. Corrective action must be taken to insure an adequate power supply to the pump.

Tightness

After determining that the pump is operating satisfactorily and the system is fully primed, inspect the pump and piping to ensure that all connections are tight. In the case of a remote dispenser, follow the submersible pump manufacturer’s instructions to ensure the system for tightness. We recommend that the tank and the piping must not be covered until this test is complete.

Belts (Suction Pumps Only)

Since belts stretch slightly during the first few minutes of operation, inspect the belt tension after completing the operational test. A properly tightened belt permits twisting the belt 180 degrees midway between the motor and pump pulleys.

On the 9853KHC, 9840K, 9852KTW2, and 9853KTW2 models, the belt can be tightened by loosening the hex nut which holds the idler pulley and sliding the pulley to either side to obtain the correct belt tension of 6-3/4 lbs, + 3/4 (30N, +3.3N). When the adjustment is complete, remember to retighten the hex nut.

On the 9852K, 9853K, and 9852KTW1 models, the belt can be tightened by loosening the cap screw which holds the idler arm and sliding the arm to obtain the correct belt tension of 6-3/4 lbs, + 3/4 (30N, +3.3N). When the adjustment is complete, remember to retighten the cap screw.

On the 9850 model, the belt can be tightened by loosening the motor mounting bolts and sliding the motor to obtain the correct belt tension of 6-3/4 lbs, + 3/4 (30N, +3.3N). When the adjustment is complete, remember to retighten the motor mounting bolts.

Safety Information

For safety information before operating pumps/dispensers, refer to "Important Safety Information" on page 3.

⚠ WARNING

Running vehicles can generate sparks, which could ignite fuel.

Running vehicles could create a safety hazard, such as a fire or an explosion.

Never dispense fuel into a vehicle with its motor running.

Preparing for Servicing the Pumps/Dispensers

This section provides instructions for preparing your site for servicing, done by a Gasboy-trained ASC.

⚠ WARNING

The pump/dispenser contains pressurized flammable fuel and lethal voltages.

Servicing a Gasboy unit incorrectly could result in severe injury or death.

Do not attempt to service Gasboy pump/dispenser yourself and do not allow untrained personnel to service Gasboy pumps/dispensers. Only Gasboy-trained ASCs must service a Gasboy unit.

⚠ WARNING

Unapproved modifications could result in hazardous conditions.

Making unapproved modifications could result in improper equipment operation and violation of state and local codes and could also create a hazardous condition, such as fire, explosion, or electrical shock.

Do not make unapproved modifications to Gasboy equipment. Consult your ASC, distributor, or Gasboy for approved modifications and kits.

Call Gasboy First

Before calling an ASC, call the Gasboy Help Desk at 1-800-444-5529. The Help Desk may be able to resolve the issue for you. If you have a service maintenance contract with Gasboy, you may contact the Help Desk first.

Service Preparation

Use a Gasboy-trained ASC to efficiently service and maintain your Gasboy pumps/dispensers. Gasboy trains and certifies ASCs to service and maintain Gasboy pumps/dispensers in a safe manner.

Before Calling for Service

Perform the following tasks before you call for service:

- Obtain complete information from the station personnel about the problem.
- Confirm that the tank has fuel.
- Confirm that the power, pump lights, and circuit breakers are on.
- Record Error Codes that may exist on the Main Display (Electronic Units only).
- Ensure that you know the unit model number and serial number. For details, refer to "Understanding Date Codes" on page 11.

Description of Problem

Provide the ASC with a complete problem description including all symptoms. Give the serviceman complete and accurate information. This ensures faster repairs and keeps downtime costs to a minimum.

Warranty Service

All warranty service must be performed by an ASC. Failure to use an ASC to perform warranty service could result in loss of warranty coverage.

Replacement Parts

Use only genuine Gasboy replacement parts and retrofit kits on your pump/dispenser.

⚠ WARNING

Non-Gasboy replacement parts may create safety hazards and violate local regulations. Non-Gasboy replacement parts could also affect the pump/dispenser's performance, reliability, and warranty.

Use of non-Gasboy replacement parts could create a hazardous condition, such as fire, explosion, or electrical shock.

Only use Gasboy replacement parts and retrofit kits.

Specialized Training

For safety reasons, do not attempt to service Gasboy pump/dispenser yourself unless you have been trained and certified by Gasboy or an authorized Gasboy certified trainer.

⚠ WARNING

The pump/dispenser contains pressurized flammable fuel and lethal voltages.

Servicing a Gasboy unit incorrectly could result in severe injury or death.

Do *not* attempt to service Gasboy pump/dispenser yourself and do not allow untrained personnel to service Gasboy pumps/dispensers. Only Gasboy-trained ASCs must service a Gasboy unit.

To receive specialized training for servicing Gasboy pumps/dispensers, contact a Gasboy-trained contractor or distributor. Training may be available locally at various regional centers.

Contractors and distributors may charge a nominal training fee. For more information, contact your nearest distributor. To locate a distributor near you, visit www.gasboy.com and click the **Locate Distributor** link.

Preventive Maintenance

Gasboy pumps and remote dispensers are designed for many years of uninterrupted service. However, certain dispenser or pump parts experience normal wear and therefore require periodic inspections. For example, detecting fuel leaks that may occur, belt tension and belt condition, lubrication, and strainer cleanliness are all important to maintain safe and efficient unit operation. Therefore to avoid annoying pump shut downs, a periodic preventive maintenance inspection plan must be established and followed.

Procedures requiring leak repair, shear valve maintenance, and disassembly of portions of the pump/remote dispenser must be performed by an ASC.

⚠ WARNING

To avoid electrical shock or hazard of an explosion or fire, when servicing remote pump/dispenser:

- Turn off and lock out all power to the pump/remote dispenser (in submersible pump applications turn off and lock out power to the submersible pump and any other remote dispensers which use that submersible pump. AC power can feed back into a shut-off dispenser when remote dispensers share a common submersible pump or starter relay).
- Turn off and lock out all power to the remote dispenser and submerged pumps at the master panel and close and test any impact valve before performing any maintenance or service to the remote dispenser, including changing any fuel filters or strainers.
- Block island so no vehicles can pull up to the remote dispenser when the dispense is being worked on.

CAUTION

Moisture from rain can damage the internal components of a pump/dispenser.

Internal components that are exposed to moisture may not operate correctly.

Do *not* open the electronics cabinet to perform any other tasks when it is raining.

⚠ WARNING

High alcohol percentage fuels such as E85 or fluids such as DEF may be incompatible with certain plumbing materials and hydraulic components.

Use of incompatible materials or components with E85 can result in leaks. For E85, unexpected failures of components may also occur resulting in fire or explosion or environmental damage. When installing components in E85 units, refer to "Important Requirements for E85 Units" on page 15.

When dispensing alternative fuels such as E85 or fluids such as DEF, verify with the manufacturer if the material of all plumbing components are compatible with the fuel (E85) or fluid being dispensed.

Maintenance of Vendor Supplied Parts

Certain parts of the dispenser/pump are produced by vendors for Gasboy (hoses, nozzles, and so on) and as such may have documentation separate from that which Gasboy supplies. In such cases, it is required to consult the vendor documentation for service intervals and any adjustments that is required for your dispenser/pump.

Use Authorized Parts

The use of unauthorized parts can:

- Void your warranty.
- Cause the loss of continuity of the Underwriters Label on the pump.
- Cause inefficient operation.
- Possibly cause an operational hazard.

Always use new gaskets and seals when servicing or rebuilding Gasboy equipment.

Performing Inspections

This section provides instructions for scheduling two types of maintenance inspections:

- General inspections
- Component inspections

Safety Warnings

Follow all safety precautions to prevent injury when inspecting a pump/dispenser at the islands.

⚠ WARNING

You are performing inspections and maintenance in a potentially dangerous environment of flammable fuels/vapors and high voltage.

Fire, explosion, or electrical shock could result in severe injury or death if you do not follow safe procedures.

Read and obey all safety precautions in this manual to prevent potential injury or death.

General Inspections

Perform a general inspection of each pump/dispenser as follows:

- Each week to ensure that all pumps/dispensers are operating properly
- Whenever you receive a complaint about potential unit problems

As part of your general inspection, inspect all areas for signs of damage or sharp edges. Replace any missing or damaged warning labels. Gasboy also strongly recommends that an ASC inspects the equipment periodically, as outlined in the next subsection.

⚠ WARNING

Leaking fuel can be ignited, causing a fire or explosion.

Fire, explosion, or electrical shock could result in severe injury or death if you continue to use damaged pumps/dispensers.

If you find any leaks or damage, stop using the pump/dispenser and contact your local ASC.

⚠ WARNING

Personnel servicing a pump/dispenser can be injured if the pump/dispenser is not barricaded to all unauthorized personnel and vehicles.

If proper precautions are not taken, the person servicing the unit can be injured by a vehicle.

Before servicing a pump/dispenser evacuate all unauthorized persons and vehicles; then, use safety tape or cones as barricades.

Component Inspections

To schedule component inspections, refer to "Preventive Maintenance Table" on page 60. The station owner must only inspect for problems. For safety reasons, several tasks in the "Preventive Maintenance Table" on page 60 including all repairs, must be performed only by an ASC. To determine if an ASC must perform a task, refer to "Who Performs the Inspection/Repair" on page 60.

⚠ WARNING

The pump/dispenser contains pressurized flammable fuel and lethal voltages.

Servicing a Gasboy unit incorrectly could result in severe injury or death.

Do not attempt to service Gasboy pump/dispenser yourself and do not allow untrained personnel to service Gasboy pumps/dispensers. Only Gasboy-trained ASCs must service a Gasboy unit.

⚠ WARNING

Leaking fuel can be ignited, causing a fire or explosion.

Fire, explosion, or electrical shock could result in severe injury or death if you continue to use damaged pumps/dispensers.

If you find any leak or damage, stop using the pump/dispenser and contact your local ASC.

CAUTION

Improperly installed or maintained equipment can create a hazard.

Improperly installed or maintained equipment could cause a fire, explosion, or electrical shock.

For any component not supplied by Gasboy (for example, hoses and nozzles), consult and follow the installation and maintenance instructions provided by the manufacturer.

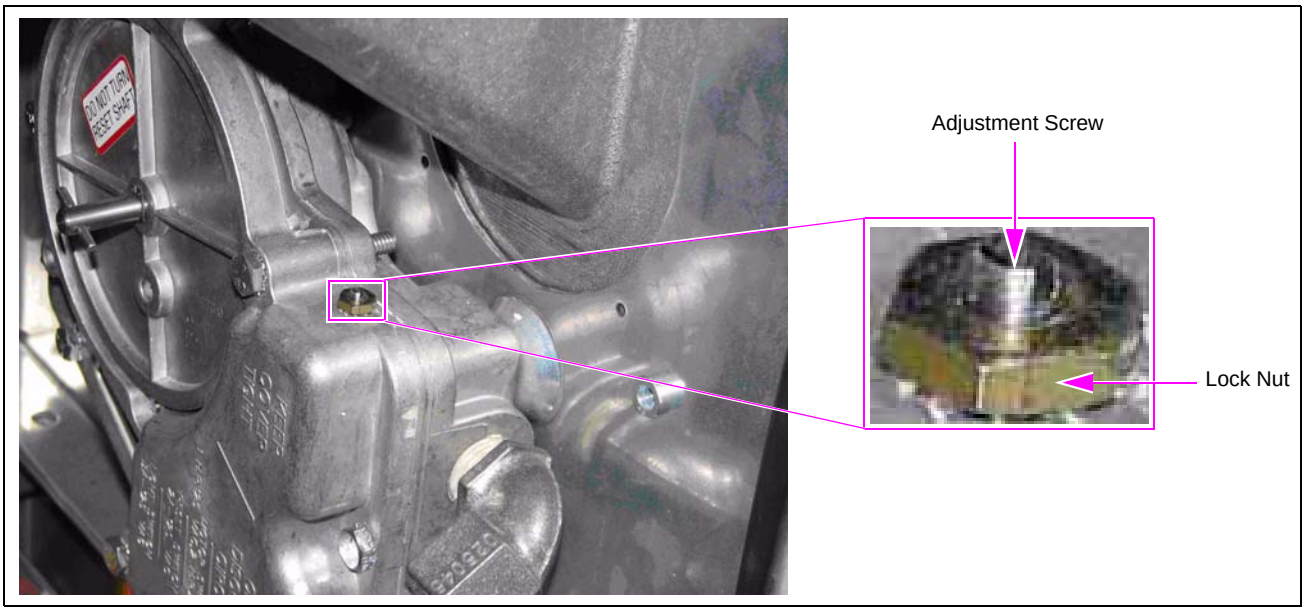
Power Reset External Adjustment

If the pump or remote dispenser unit fails to reset or shut-off properly, the reset motor must be adjusted. To adjust, proceed as follows:

1. Loosen the lock nut on the adjusting screw and back screw out until it stops.
2. Move the reset lever to the ON position.
3. Turn adjustment screw in until reset motor starts.
4. Advance adjustment screw an additional 1/2 to 3/4 turn. Hold screw in this position and tighten the lock nut.

5 Move the reset lever to the OFF position, and then back to the ON position to verify if the reset motor operates properly. The reset coupling must make one revolution and stop.

Figure 3-31: Power Reset for Pump or Remote Dispenser Unit



Filter Strainer Replacement

If the unit is equipped with a strainer and filter, inspect and change it at regular intervals (refer to "Filter change and strainer cleaning" in "Preventive Maintenance Table" on page 60). A dirty strainer or filter in a pump or remote dispenser causes a slower delivery rate. Refer to the accessories section of your parts manual to ensure that you replace the strainer if required and filter with one designed for your model. Always use a drip pan and absorbent material directly below the filter when removing the cartridge to prevent contamination of both the soil and the electrical components within the cabinet. This service must not be done by untrained individuals.

⚠ WARNING

High alcohol percentage fuels such as E85 or fluids such as DEF may be incompatible with certain plumbing materials and hydraulic components.

Use of incompatible materials or components with E85 can result in leaks. For E85, unexpected failures of components may also occur resulting in fire or explosion or environmental damage. When installing components in E85 units, refer to "Important Requirements for E85 Units" on page 15.

When dispensing alternative fuels such as E85 or fluids such as DEF, verify with the manufacturer if the material of all plumbing components are compatible with the fuel (E85) or fluid being dispensed.

Special Setup Required for Aircraft Fueling

⚠ CAUTION

Aircraft require finely filtered fuel.

Improperly filtered fuel could cause the engine to fail.

Do not use Gasboy pumps/dispensers for direct fueling of aircraft without auxiliary filters, separators, and other equipment is required to ensure product purity.

Adjusting the Belts (Suction Pumps Only)

With the proper care, belts give exceptionally good service. A loose belt not only cuts down dispensing speed, due to slipping, but also results in excessive wear. For more information, refer to "Preventive Maintenance Table" on page 60. This service must not be done by untrained individuals.

Preserve the Finish of Your Pumps

Nearly all gasoline pumps are installed outdoors where their surfaces are subjected to the weather conditions. As a result, it is required to give the finish a reasonable amount of care, if an attractive appearance is to be maintained.

The finish on Gasboy pump housings is a high-heat baked synthetic enamel, similar to that used on automobiles. The life of this finish can be lengthened several years if, at regular intervals, the painted surfaces are thoroughly cleaned with a high grade automobile polish and then protected with a coat of paste wax. Do not use abrasive cleaners or polish. Do not use high pressure spraying equipment. Do not use window cleaner with ammonia on the electronic display.

In order to retain the unmarked finish on stainless steel, occasional cleaning is required. In corrosive atmospheres, such as coastal areas, a more frequent cleaning schedule is required. Under ordinary conditions, washing with detergent or soap and water, followed by a clean water rinse, is sufficient. If hard water is used, the surface must be wiped dry with a soft clean cloth to prevent the formation of water spots. Marks or spots, such as grease, oily fingerprints, and smudges that resist soap and detergents, may have to be removed with a stronger cleaner.

IMPORTANT INFORMATION

DO NOT use ordinary steel wool as iron particles may adhere to the surface and cause corrosion. Care must be taken in choosing a cleaner because any cleaning compounds or powders which contain abrasives can scratch a mill-rolled finish. Exercise care to ensure that any polishing is done with the lines in the steel, never across them. After cleaning, an application of paste wax is recommended to protect the surface and prolong the interval between cleaning.

Preventive Maintenance Table

Components	Recommended Frequency	Recommended Maintenance	Who Performs the Inspection/Repair
Stainless Steel sheathing and lower doors	Monthly	For stains on stainless steel, use a cleaner specifically formulated for cleaning stainless steel. Gasboy recommends Bar Keepers Friend®. Ensure that you thoroughly rinse off all cleaner. Ensure that you do not spray water/cleaner directly at or into card readers, cash acceptors, or printer chutes.	Once every three months (in harsh environments once a month)
Hoses, swivels	At lease once a week or if a customer complaint arises	1 Inspect each hose for leaks abuse and excessive wear.	Owner—Inspect/ Repair and test

⚠ WARNING

Leaking fuel can be ignited, causing a fire or explosion.

Fire, explosion, or electrical shock could result in severe injury or death if you continue to use damaged pumps/dispensers.

If you find any leaks or damage, stop using the pump/dispenser and contact your local ASC.

2 Inspect each hose, break away, whip hose, and vapor hose for the following wear or damage:
- Bulges Reinforcement showing
- Cracks - Soft spots
- Damage - Tears
- Flattened spots - Weaknesses
- Holes - wear through

3 Ensure that the vapor recovery hoses do not touch the ground when the nozzle is seated properly in the nozzle boot.

4 Consult the manufacturer for any additional inspections required.

5 If repair is required, call an ASC.

⚠ WARNING

The pump/dispenser contains pressurized flammable fuel and lethal voltages.

Servicing a Gasboy unit incorrectly could result in severe injury or death.

Do not attempt to service Gasboy pump/dispenser yourself and do not allow untrained personnel to service Gasboy pumps/dispensers. Only Gasboy-trained ASCs must service a Gasboy unit.

⚠ WARNING

Hoses of excessive length may create a trip hazard.

Serious injury could occur as a result of tripping over an excessive length hose.

Do not use excessive length hoses.

Components	Recommended Frequency	Recommended Maintenance	Who Performs the Inspection/Repair
Hose retrievers	Once a week or if a customer complaint arises	1 Inspect hose retrievers for frayed or broken cables. 2 Inspect hose retrievers for cables wrapped around hoses. 3 If repair is required, call an ASC.	Owner—Inspect/ Repair and test

⚠ WARNING

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Do not attempt to service Gasboy pump/dispenser yourself and do not allow untrained personnel to service Gasboy pumps/dispensers. Only Gasboy-trained ASCs must service a Gasboy unit.

⚠ WARNING

Hoses that are not recoiled properly create a trip hazard.

Serious injury could occur as a result of tripping over an excessive length hose.

Repair or replace broken hose retrievers promptly.

Components	Recommended Frequency	Recommended Maintenance	Who Performs the Inspection/Repair
Nozzles and boot area	Once a week or as notified about a potential problem	1 Inspect nozzles for the following wear or damage: • Damage • Leaks • Loose nozzle spouts • Missing parts, such as retainer springs and splash guards	• Owner—Inspect • ASC only—Repair and test

⚠ WARNING

Leaking fuel can be ignited, causing a fire or explosion.

Fire, explosion, or electrical shock could result in severe injury or death if you continue to use damaged pumps/dispensers.

If you find any leak or damage, stop using the pump/dispenser and contact your local ASC.

2 Inspect vapor recovery boots (bellows) for proper seal and damage.
3 Consult the nozzle manufacturer for any additional required inspections.
4 If repair is required, call an ASC.

⚠ WARNING

The pump/dispenser contains pressurized flammable fuel and lethal voltages.

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Do not attempt to service Gasboy pump/dispenser yourself and do not allow untrained personnel to service Gasboy pumps/dispensers. Only Gasboy-trained ASCs must service a Gasboy unit.

Components	Recommended Frequency	Recommended Maintenance	Who Performs the Inspection/Repair
Leaks, external	Once a week, or as notified about a potential leak	1 Inspect the following for any signs of damage or leaks, such as cracks or cuts: • Couplings • Hose outlet castings • Swivels 2 Review all documentation provided by each component's manufacturer. 3 If you find any leak, stop using the pump/dispenser and make arrangements to repair the leak.	• Owner—Inspect • ASC only—Repair and test

⚠ WARNING

Leaking fuel can be ignited, causing a fire or explosion.

Fire, explosion, or electrical shock could result in severe injury or death if you continue to use damaged pumps/dispensers.

If you find any leak or damage, stop using the pump/dispenser and contact your local ASC.

⚠ WARNING

The pump/dispenser contains pressurized flammable fuel and lethal voltages.

Servicing a Gasboy unit incorrectly could result in severe injury or death.

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Displays (Electro/Mechanical Units)	Once a week	1 Inspect displays for proper reading of all digits. 2 Verify that displays are properly backlit.	• Owner—Inspect • ASC Repair and test

Components	Recommended Frequency	Recommended Maintenance	Who Performs the Inspection/Repair
Breakaways	Once a week or after drive-offs	1 Inspect breakaways for secure connection to hose and for any leaks.	• Owner—Inspect • ASC only—Repair and test

Note: Not all breakaways are reusable after separation. Follow manufacturer directions for inspection and resetting for inspection and resetting adjustable types.

⚠ WARNING

Leaking fuel can be ignited, causing a fire or explosion.

Fire, explosion, or electrical shock could result in severe injury or death if you continue to use damaged pumps/dispensers.

If you find any leak or damage, stop using the pump/dispenser and contact your local ASC.

2 For units with hose retrievers, position the breakaway coupling between the retriever connection to the hose and the nozzle. The breakaway whip hose must be attached to the nozzle.
3 Consult the breakaway manufacturer for any additional required inspections.
4 If repair is required, call an ASC.

⚠ WARNING

The pump/dispenser contains pressurized flammable fuel and lethal voltages.

Servicing a Gasboy unit incorrectly could result in severe injury or death.

Do not attempt to service Gasboy pump/dispenser yourself and do not allow untrained personnel to service Gasboy pumps/dispensers. Only Gasboy-trained ASCs must service a Gasboy unit.

Warning tags and operating instructions	Once a week	Inspect for and replace all missing, damaged, or unreadable warning tags or operating instructions.	• Owner—Inspect • Owner or ASC—Replace
Hose continuity	Once a month	Verify that the hose continuity (including breakaway whip hose) complies with the hose manufacturer's requirements.	• Owner—Inspect • ASC only—Repair

⚠ WARNING

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Components	Recommended Frequency	Recommended Maintenance	Who Performs the Inspection/Repair
Meters, Valves	Once a month, after drive-offs, or as notified about a potential leak	1 Whenever possible, Gasboy recommends removing power to the unit before performing these inspections. 2 Block off the pump/dispenser to prevent customers from operating the pump/dispenser during inspection. 3 Remove the lower panels slowly and carefully. 4 Inspect all hydraulic connections and seals, including the following: • Meters • Valves 5 If wetness or dripping fuel is found, stop using the pump/dispenser and make arrangements for repairing the leak. *Note: Some staining of parts around seals is normal and does not necessarily indicate a leak.* 6 Monitor repaired components closely.	• Owner—Inspect • ASC only—Repair and test

⚠ WARNING

Gasoline or other fuels can damage the eyes.

Fuel sprayed into the eye can burn eye tissue.

To prevent potential injury, wear eye protection when performing these inspections.

⚠ WARNING

Self-contained pumps have a pinch point between the belts and the pulleys.

Severe injury could occur if part of the body is pulled into the pinch point.

To prevent injury when inspecting self-contained units, do not place you hands near the belts, pulleys, or motors. Turn off the power before servicing the unit. Do not operate the unit with the door removed.

⚠ WARNING

Leaking fuel can be ignited, causing a fire or explosion.

Fire, explosion, or electrical shock could result in severe injury or death if you continue to use damaged pumps/dispensers.

If you find any leak or damage, stop using the pump/dispenser and contact your local ASC.

⚠ WARNING

The pump/dispenser contains pressurized flammable fuel and lethal voltages.

Servicing a Gasboy unit incorrectly could result in severe injury or death.

Do not attempt to service Gasboy pump/dispenser yourself and do not allow untrained personnel to service Gasboy pumps/dispensers. Only Gasboy-trained ASCs must service a Gasboy unit.

<table>
<tr><th>Components</th><th>Recommended Frequency</th><th>Recommended Maintenance</th><th>Who Performs the Inspection/Repair</th></tr>
<tr><td>Filter change and strainer cleaning</td><td>New Installations—After 50,000 gallons (200,000 liters), or after one month

After first filter change—Every 300,000 gallons (1.0 million liters), every six months, or when fuel delivery rate significantly slows.</td><td>Replace filters, and clean strainers regularly. An ASC must perform these tasks.

⚠ WARNING
The pump/dispenser contains pressurized flammable fuel and lethal voltages.

Servicing a Gasboy unit incorrectly could result in severe injury or death.

Do not attempt to service Gasboy pump/dispenser yourself and do not allow untrained personnel to service Gasboy pumps/dispensers. Only Gasboy-trained ASCs must service a Gasboy unit.</td><td>ASC</td></tr>
<tr><td>Inspect and lubricate shear valves</td><td>Every six months</td><td>To inspect valve operation, perform the following tasks. If you are not sure which device is the shear valve, have the ASC inspect and lubricate this device for you.
Note: Shear valves are typically only used on dispensers. If you have pumps, consult your installer to determine if they were installed on your pump.
1 Trip the valve. For details, refer to “Shear Valve” on page 40.
2 Authorize the hose at the console, if required.
3 Lift the operating handle.
4 Place the discharge nozzle in an approved container.
5 Squeeze the nozzle operating lever. If flow continues after several seconds, the valve is defective.
6 Place a few drops of SAE10 oil on valve body shaft.
7 Open and close valve with a wrench several times.
8 Place valve back in service.
9 If repair is required, call an ASC.

⚠ WARNING
The pump/dispenser contains pressurized flammable fuel and lethal voltages.

Servicing a Gasboy unit incorrectly could result in severe injury or death.

Do not attempt to service Gasboy pump/dispenser yourself and do not allow untrained personnel to service Gasboy pumps/dispensers. Only Gasboy-trained ASCs must service a Gasboy unit.</td><td>• Owner—Inspect
• ASC only—Repair and test</td></tr>
</table>

Components	Recommended Frequency	Recommended Maintenance	Who Performs the Inspection/Repair
Pump pulleys, belts, and belt tension	Every six months or if a squealing noise occurs during unit operation	1 Remove power to the unit.	• Owner—Inspect • ASC only—Repair and test

⚠ WARNING

Failure to remove power to the unit before servicing it could result in injury.

Failure to remove power could create a hazard, such as electrical shock.

Remove power to the unit before servicing it.

⚠ WARNING

Self-contained pumps have a pinch point between the belts and the pulleys.

Severe injury could occur if part of the body is pulled into the pinch point.

To prevent injury when inspecting self-contained units, do not place your hands near the belts, pulleys, or motors. Turn off the power before servicing the unit. Do not operate the unit with the door removed.

2 Inspect belts for fraying/cracks.
3 Inspect pulleys for excessive wear in grooves and excessive bearing play.

Tank	Every six months	1 Monitor water levels in tank with electronic tank monitor or water detection pasted on tank measuring stick. 2 If repair is required, call an ASC.	Owner - Inspect

⚠ WARNING

The pump/dispenser contains pressurized flammable fuel and lethal voltages.

Servicing a Gasboy unit incorrectly could result in severe injury or death.

Do not attempt to service Gasboy pump/dispenser yourself and do not allow untrained personnel to service Gasboy pumps/dispensers. Only Gasboy-trained ASCs must service a Gasboy unit.

Components	Recommended Frequency	Recommended Maintenance	Who Performs the Inspection/Repair
Nozzle hooks and shafts	Every six months	1 Lubricate with silicone spray, if required. 2 Inspect for damage. 3 Verify that the locking tab locator is not broken. (The locking tab locator helps hold the nozzle in the nozzle boot and enables the station owner to lock the nozzle boot with a clasp padlock). 4 If repair is required, call an ASC. **⚠ WARNING** The pump/dispenser contains pressurized flammable fuel and lethal voltages. Servicing a Gasboy unit incorrectly could result in severe injury or death. Do not attempt to service Gasboy pump/dispenser yourself and do not allow untrained personnel to service Gasboy pumps/dispensers. Only Gasboy-trained ASCs must service a Gasboy unit.	• Owner—Inspect • ASC only—Repair and test
Mechanical computers	Every six months	Lubricate well. See VeederRoot manuals for lubrication points. **⚠ WARNING** The pump/dispenser contains pressurized flammable fuel and lethal voltages. Servicing a Gasboy unit incorrectly could result in severe injury or death. Do not attempt to service Gasboy pump/dispenser yourself and do not allow untrained personnel to service Gasboy pumps/dispensers. Only Gasboy-trained ASCs must service a Gasboy unit.	ASC only
Door locks	Every six months or if door locks become difficult to open and close	Lubricate with a graphite lubricant or lock oil. Follow manufacturer's instructions. Do not over-lubricate. Use a rag to wipe any excess that may drip.	Owner
Water in Tank	After every fuel tank fill-up	Remove with a sump pump 1 Gasboy recommends removing power to the unit before performing these inspections and process. 2 Block off the pump/dispenser to prevent customers from operating the pump/dispenser during procedure. 3 Access and Insert sump pump into tank and draw off water.	• Owner—Inspect • ASC only—Repair and test

Components	Recommended Frequency	Recommended Maintenance	Who Performs the Inspection/Repair
Wax pump/dispenser	Every six months or once a month in harsh areas	Wax metal parts with high-grade, detergent-resistant, nonabrasive automobile wax. Do not wax textured surfaces. Adhere to the following guidelines for waxing the pumps/dispensers: • Before waxing, clean the pumps/dispensers and touch up deep scratches on painted surfaces. • Wax painted surfaces with a high grade, long lasting, detergent resistant, non-abrasive automobile wax.	Owner

Note: Gasboy recommends more frequent waxing for pumps/dispensers located in salty or corrosive environments, such as near the ocean or near pollution sources.

CAUTION

Textured surfaces of Gasboy pumps/dispensers can become damaged if waxed.

Waxing the textured surfaces can damage the units, adversely affecting the appearance of the units.

Do not wax textured surfaces.

CAUTION

The main and PPU displays of Gasboy pumps/dispensers can become difficult to read if waxed.

Waxing the main and PPU displays may impede a customer's ability to read the display because the display may appear hazy.

Do not wax the displays on the pump/dispenser.

Components	Recommended Frequency	Recommended Maintenance	Who Performs the Inspection/Repair
Wash pump/dispenser *Note: Gasboy recommends more frequent cleaning for pumps/dispensers located in salty or corrosive environments, such as near the ocean or near pollution sources*.	As required	Clean with automobile cleaning products. Clean plastic surfaces and poly carbonate graphics with water and mild detergent. Do not wash with a hose. Do not use window cleaner with Ammonia on Electronic display windows. Adhere to the following guidelines for washing the pumps/dispensers: • Clean and protect your equipment with automobile cleaning and protection products. • Clean plastic surfaces and poly carbonate graphics with a solution of water and mild detergent. • Use a soft cloth, paper towel, or sponge to clean displays separately. Window cleaners are preferred. • Wash pumps/dispensers by hand, or use a hose nozzle set to a fine gentle spray.	Owner
Display windows	As required	Clean with nonabrasive cloth or paper towel with commercial glass cleaner. Do not use window cleaner with Ammonia. Do not wax or use any abrasive cleaners or fuels.	Owner

CAUTION

Moisture can damage the internal components of a pump/dispenser.

Internal components exposed to moisture may not operate correctly.

Do not use a pressure washer to clean the pumps/dispensers.

CAUTION

The exterior surface of Gasboy pumps/dispensers can become damaged if cleaned with harsh cleaners.

Harsh cleaners can damage the units, adversely affecting the appearance of the units.

Do not use solvents, harsh detergents, degreasers, steel wool, abrasive cleaners, or petroleum-based solvents on the pumps/dispensers.

Glossary

A

Access Door
Locked Access door on pump/dispenser.

Authorized Service Contractor (ASC)
A Gasboy-trained and authorized service contractor.

B

Boot Area
The part of the pump/dispenser where the nozzle is stored.

Breakaway
Device attached to the hoses on pump/dispensers that detaches if a customer drives off with the nozzle still attached to the cars; the device protects against gasoline being spilled and a resulting fire, and it minimizes damage to the pump/dispensers in the event of a drive off and stops fuel flow through the separated hose.

C

Component Inspections
Periodic inspections by the station manager of various pump/dispenser components; the station manager must look for signs of damage and wear for each component.

Note: For a list of components and the recommended frequency of inspection, refer to "Component Inspections" on page 57.

Couplings
Plumbing used to join ordinary pipes or hoses together; see also "Breakaway".

Cradle
Refer to "Boot Area".

D

Date Code
Two-letter code that is stamped on the pump/dispenser before the serial number; shows the month and year of manufacture.

DEF
Diesel Exhaust Fluid. A clear, colorless, non-toxic, non-flammable, non-combustible liquid. It is made up of 32.5% urea with the balance distilled or de-ionized water. Urea and water are completely miscible and do not separate in storage. DEF is mildly corrosive.

Dispenser
A device that uses an STP in the storage tank to move fuel from the storage tank.

Drive Offs
Situations where customers forget to remove the nozzles from the tanks in their cars and drive away from the pump/dispenser; the hose detaches from the pump/dispenser at the breakaway.

E

Electrical Junction Box
Refer to "Junction Box" on page G-3.

E85
E85 is an alcohol fuel mixture that contains up to 85% denatured fuel ethanol, and gasoline or other hydrocarbon by volume.

G

General Inspections
Weekly inspections by the station manager of all of the pumps/dispensers on the site; the station manager must ensure that all pumps/dispensers are operating properly, that no warning labels are missing, and that there is no evidence of damage or sharp edges.

Grade
Quality of fuel, such as unleaded or premium.

Graphite Lubricant
Type of lubricant used on the door locks of pumps/dispensers.

H

Hose Outlet Castings
Fuel discharge port on the pump/dispenser where the hose is attached to the unit.

Hose Retriever
Device (option) at the pump/dispenser that retracts and pulls the hose close to the pump/dispenser after the customer has completed fueling.

Hydraulic Connections
Any fuel-handling hardware where castings, hoses, and pipes are joined through threads, O-rings, or other seals.

I

Inspections
Refer to "Component Inspections" on page 57 and "General Inspections" on page 56.

J

Junction Box
The explosion-proof box on the pump/dispenser that contains the main electrical connections between the pump/dispenser and the main power and data source.

L

Lock Oil
Type of lubricant used on the door locks of pumps/dispensers.

M

Meter
Device in the pump/dispenser that measures fuel flow.

Mode of Operation
The method of functioning of the pump/dispensers.

N

National Fire Protection Association (NFPA)
An international nonprofit organization dedicated to protecting lives and property from the hazards of fire; publishes 280 recognized codes and standards, including the *National Electrical Code.*

Nozzle
On the pump/dispenser, the projecting part at the end of the hose that regulates and directs the flow of fuel.

Nozzle Hook
In the boot area on the pump/dispenser; place upon which the nozzle rests when the pump/dispenser is not in use.

O

Occupational Safety and Health Association (OSHA)
U.S. agency that develops and enforces regulations for the safety and health of workers engaged in interstate commerce.

P

Price Per Unit (PPU)
The price of each unit of gasoline dispensed.

Pump
A device that uses a self-contained pumping unit and motor to move fuel from the storage tank.

Pump Pulleys
Ordinary pulley wheels used on self-contained suction pumps and motors.

S

Seals
Substances used to prevent seepage of gasoline or vapor from the pump/dispenser.

Shear Valves
Device at the base of each pump/dispenser that shuts off the fuel flow in case of a vehicle impact or fire at the base of the pump/dispenser.

Side A
Normally the side of the pump/dispenser with the electrical junction box (For front load units, Side A may be the side opposite to the junction box.).

Side B
The side opposite to that of side A.

Silicone Grease
Type of lubricant used on the nozzle hooks and shafts of pumps/dispensers.

Standalone Mode
Authorization and payout occur at the pump.

Submerged Turbine Pump (STP)
Submerged turbine pump in underground storage tank.

Swivels
A fastening that permits the free turning of attached parts to the pump/dispenser.

V

Volume Allocation
The maximum amount of product the pump/dispenser will dispenser.

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